	1	11	21	31	41	51	61	71	81	91
					1					
					*****	**				**
SEQ 3			MTVAD	IDVPPAEGIP	YFTPAQNPPA	GTAANPQTN-	GQKIPKLF	TPLTIR-GVT	£Ö	NRLGLAPLCQ
SEQ 6			MSQPVVPD	TENKPAPGIS	YFTPAQEPPA	GTAANFQSDG	SAPPKLE	RPLSVR-GLT	EH	NRIGESPECQ
SEQ 8			MGSNAFRS	PAVTKSSSTP	YYTPANNGGA	ALKPODPT	NUMBER	TPL-NVI-GVT	FH	MRIGIAPICO
SEQ 10			MALPD	VENTPAAGIP	VYTPEODUDA	GTAANPOTSG	RAVEKLI	OPLKIG-KLA	I.P	NRIGUSEMCO
SEQ 12 SEO 14			MIVEIQVRES	DETRONTERS		MENN	NTIPALE	OPIKISDSIT	Tb	NRIGVSPMCM
SEQ 14 SEO 16			MADETOKK	TSSPAAPGVP	FYTPAQVPAA	GTPLPSTPG-	DVPTLE	TPLKIR-GVE	LQ	NRFAVAPMCT
SEQ 19						MATST	TSDLKLS	QPLTLPNGLT	P5~	NRLVKAAMAE
SEO 22			MSAEKK	TLSKPAAGVP	YYTPAQEPPA	GTPLQQQDA-	IPTLF	KPLKIR-GVE	LS	NRFGVSPMCT
SEQ 24			MT	IVNEGAENVG	YFTPAQKIPA	GAAIG-VP	QTKLF	TPLKIR-GVE	FHFT	NRMEVSPMCT
SEQ 27			MTG	TANKAAPGVP	FYTPAQEPPA	GTPVDA5TA→	PTLF	KPLRIR-DLT	IN	NRIWVSPMCQ
SEQ 30			MAYEI	IDNVAAEGVP	Addobatak	GTQTSG	STKLF	TPITIR-GVT	FP	NKTETAPECO
SEQ 33		MP			EARDAODDO	CHERDICORE		CITYTO-NIT	LO	NRTEVSPMCO
SEQ 35			KCEANGHHKI	TONTBREGAR	YYTPAOD DA	GTSIDVQFEG	KVF	T. TTTR-GVT	EB	NRLFLAPLCO
SEQ 38 SEQ 40			TOMPACOL	TOMESTIC				LKIR-GLT	LQ	NRIMLRGLCQ
SEC 42										
SEQ 42 SEO 44					-MSPPRFFAA	PADPSPLG	TPLKY	PVSGRSAP		NRFLNAAMSE
SEC 83	MENUSCOOOSO	ATPULSSONG	TEPODANKEV	VONVAAKGVO	YENPEQLPAP	GLGINGPNNT	LPKVF	TPIKIR-GMT	MP	NRIWVSPMCQ
SEQ 85		MDTS	REVSGLTPPL	VDSIDALKIS	NEVPTRSGHP	PPGSVPESIL	PEGVKKPALF	QTLTLP-FAA	PECAGRATTER	NRIIVSPMCQ
Bacteria										
T44612							MSALF	EPYTLK-DVT	LR	NRIALPENCO
NP_625402					MTVCCDD	DODDERDA-	MSALE	TOLKIN-SIE	1.0	NRVVVSPMCT
NP_295913		MYSMLT	DOOD TOURNI.	PLEDAGWLEG	YERWLARKAG	MTVRDDETP-	PPPMF	TPFKLR-GLT	LA	NRIVMSPMAM
AF320254		MYSMLT	Kaghtaneno	KUKOKGNUBC						
OYE family Af4875						MREEPSSAQ-	LF	KPLKVGRC	HLG	HRMIMAPTTR
A£4961					MTI	RKLDGEESM-	LF	OPLEIA-NGR	IRLS	HRVVHAPMTR
Ca2460				MTVESTNS	EVV PAGTKO1	EIAPLGSTK-	LF	QPIKVG-KNI	Tb	HRVAHAPTTR
Nc4452						MAATAAESR-	LF	QPLKLTPKIT	LG	HRLAMAPLTR
ScOYE1				MS	EVKDF	KPQALGDTN-	LF	KPIKIG-NNE	PP	HEAVIPELIK
SCOYE2				MP	EAKDE	KPQALGUTN-	F	KPIKIG-NNE	LL	HRAVMPPLTR
SCOYE3 A36990				MOTESTAS	FVV PSDTKI.T	DVTPLGSTK-		OPIKVG-NNV	LP	QRIAYVETTR
A30220										
A30550	101	333	121	131	141	151	161	171	181	191
A30250	101	111	121	131	141	151	161	171	181	191 -5
A30250	101	111	121	131	141	151	161	171	181	191
SEQ 3	101	111	121 3 *****	131 *	141	151 4 E-GRITPODV	161 	171 	181 ** RVI-DEVHSQ	191 -5 **** GQ-KIGVQ
SEQ 3 SEQ 6	101 2 YSA	111 QDGHM	121 ***** TDYHIAHL	131 * GGIAQRGPGL	141 MLIEATAVQP	151 4 E-GRITPQDV E-GRITPODL	161 GLWKDS	171 QIAPMR	181 ** RVI-DEVHSQ RVI-EEVHSQ	191 -5 6Q-KIGVQ NQ-LIGVQ
SEQ 3 SEQ 6 SEQ 8	101 2 YSA	111	121 3 TDYHIAHL TPWHAHL	131 * GGIAQRGPGL GGIAQRGPGF GHIALKGAGL	141 MLIEATAVQP LMVEATAVEP VFIEATAVOP	151 4 E-GRITPQDV E-GRITPQDL N-GRISPNDS	161 	171QIAPMRQIEPLS TTSEOFLGLK	181 RVI-DEVHSQ RVI-EEVHSQ RVV-EEMHAQ	191 -5
SEQ 3 SEQ 6 SEQ 8 SEQ 10	101 2 YSA YSCES YSA	111QDGHMDDGHM DPSSPHVGALEDGHM	121 TD-YHIAHL TP-WHMAHL TD-YHLAHL TD-YHLAHL	131 *	MLIEATAVQP LMVEATAVEP VFIEATAVQP MMIEATSVSP TIVESTAVSP	1514 E-GRITPQDV E-GRITPQDV N-GRISPNDS E-GRITPQDV E-GGLSPHDL	161GLWKDSGLWCDSGLWCDSGLWKDS	171QIAPMRQIEPLS TTSEQFLGLKQIAPMK	181* RVI-DEVHSQ RVI-EEVHSQ RVV-EEMHAQ RVI-DEVHSQ PIV-DYAHSQ	191 -5
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12	101 2	111QDGHMDDGHM DPSSPHVGALEDGHMDYNFEA	121 TDYHIAHL TPWHMAHL TDYHIAHL TPYHIAHL TTPYHIHH	131 GGIAQRGPGL GGIAQRGPGF GHLALKGAGL GGIAQRGPGL GGIAQRGPGL GSFAVRGPAL	141 MLIEATAVQP LIWEATAVEP VFIEATAVQP MMIEATSVSP TIVESTAVSP TILESIFVSE	1514 E-GRITPQDV E-GRITPQDL N-GRISPNDS E-GRITPQDV E-GGLSPHDL N-SGLSIHDL	161	171QIAPMRQIEPLS TTSEQFLGLKQAEKLKQAEKLK	KIN-DEIHDO KAI-PEAHRO KAI-PEAHRO KAI-PEAHRO KAI-DEAHRO FIN-DE	191 -5
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14	101 2 YSA YSCES YSA YSA	111QDGHMDDGHM DPSSPHVGALEDGHMDYNFEASPTDNQA	121 TDYHIAHL TPWIMMIH TDYHIAHL TDYHIAHL TPYHIHY TLEHFVHY	**	L41 MLIEATAVQP LMVEATAVEP VFIEATAVQP MMIEATSVSP TIVESTAVSP IILESIFVSE TIFEATGVLP	1514 E-GRITPQDV E-GRITPQDV E-GRISPNDS E-GRITPQDV E-GGLSPHDL N-SGLSIHDL N-GRITPECS	161	171QIAPMRQIEPLS TTSEQFLGLKQAEKLKQAHSLRQAHSLR	181 RVI-DEVHSQ RVI-EEVHSQ RVI-DEVHSQ RVI-DFYHSQ RIV-DYIHSQ RIV-DYIHSQ	191 -5 GQ-KIGVQ NQ-LIGVQ SQ-KIGVQ NQ-LIAIQ SQ-LIAIQ GG-KAGIQ
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16	101 2 YSA YSCE	111DGHMDDGHM DPSSPHVGALEDGHMDDGHM	1213 TDYHIAHL TPWHWAHL TNYHLAHL TDYHIAHL TPYHLHY TLFHFVHY TDWHLVHY TDWHLVHY	**	L41 MLIEATAVQP LINVEATAVEP VFIEATAVQP MNIEATSVSP TIVESTAVSP IILESIFVSE TITEATGULE LILTGNYQVD	1514 E-GRITPQDV E-GRITPQDV E-GRITPQDV E-GGLSPHDL N-SGLSIHDL N-GRITPECS HAHKGDAHDI	161GLWKDSGLWQDGGLWKDSGLWKDSGLWNDBGLWNDBGLWNDBGLWNDBGLWNDB	171	181 RVI-DEVHSQ RVV-EEVHSQ RVI-DEVHSQ RIV-DYIHSQ RIV-DYIHSQ KIV-DYIHSQ	191 -5 6Q-KIGVQ NQ-LIGVQ SQ-KIGVQ KQ-LIAIQ DG-ICCIQ GQ-KAGIQ GQSKTPVVVQ
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14	101 2	111DGHMDDGHM DPSPHVGAL	121 TD-YHIAHL TP-WHMAHL TD-YHIAHL TP-YHIAHL TP-YHIHY TC-YHIHY TL-FHFVHY TD-WHLVHL PN-FELAAV	GGIAQRGPGL GGIAQRGPGL GGIAQRGPGL GGIAQRGPGL GGIAQRGPGL GSFAVRGPAL GSFALRGVPL YATWARGDWG	MLIEATAVQP UWEATAVEP VFIEATAVEP MNIEATSVEP TIVESTAVSP TILESIFVSE TIFEATGVLP LILTGNQVD	1514 E-GRITPQDV E-GRITPQDV E-GRITPQDV E-GRISPNDS E-GRITPQDV L-GGLSPHDL N-SGLSIHDL N-GRITPECS HAHKGDAPLI N-GRISPEDS	161GLWK-DSGLWQ-DGGLWC-DSGLWN-DDGLWQ-DSSPNH-PGGLWD-DS	171QIAPMRQIEPLS TTSEQFLGLKQIAPMRQAEXLK	181 TOTAL T	191 -5 6Q-KIGV-Q NQ-LIGV-Q GA-KVGI-Q SQ-KIGV-Q DG-ICCI-Q GQ-KAGI-Q GQ-KAGI-Q GQ-KAGI-Q
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 16 SEQ 19	101 2	111	1213 TDYHIAHL TPWHAHL TDYHIAHL TDYHIAHL TDYHLHY TLFHFVHY TDWHLVHL TDFHLVHL TDFHLVHL	**************************************	MLIEATAVQP LWEATAVEP VFIEATAVQP MMIEATSVSP TIVESTAVSP IILESI FVSE TIFEATGVLP LILTGNVQVD TIVEATSVTP MWEATSVTP	1514 E-GRITPQDV E-GRITPQDL N-GRISPNDS E-GRITPQDV E-GGLSPHDL N-SGLSIHDL N-GRITPECS HAHKGDAHDI N-GRISPEDS E-GRISPEDS	161GLWK-DSGLWC-DSGLWC-DSGLWC-DSGLWC-DSGLWC-DSGLWQ-DSSPNH-PGGLWQ-DSGLWQ-DSGLWQ-DS	171QIAPMRQIEPLS TTSEOFLGLK	181 RVI-DEVHSQ RVI-EEVHSQ RVI-EFVHSQ RVI-DFYHSQ PIV-DYHSQ RIV-DYHSQ KAWADAARIN RIV-DYYHSQ RAW-DERHS	191 -5 6Q-KIGVQ NQ-LIGVQ SQ-KVGIQ KQ-LIAIQ DG-ICCIQ GQ-KAGIQ GQ-KIGIQ GQ-KIGIQ NQ-KIGIQ
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 24 SEQ 27	101 2	111QDGHM DESSPHVGALDYNEASPTDNQASPTDNQAFGNHL	121 TD-YHIAHL TM-YHLAHL TM-YHLAHL TD-YHIKHL TE-FHEVHY TL-FHEVHY TD-FHLVHL TD-FHLVHL TD-FHLVHL	131	MLIEATAVQP IMVERTAVEP WFIERTAVQP MMIEATSVSP ITVESTAVSE IILESIFVSE TIFERTGVLP UMVERTAVSP SMVERTAVSP	1514 E-GRITPQDV E-GRITPQDV N-GRISPNDS E-GRISPNDL N-SGLSINDL N-SGLSINDL N-GRITPECS E-GRISPNDS E-GRISPNDS RAMSOAHDI N-GRISPEDS E-GRISPNDS	161	L71	RVI-DEVHSQ RVI-EEVHSQ RVI-EEVHSQ RIV-DYAHSQ RIV-DYHSQ RIV-DYHSQ RIV-BEAHSQ RIV-BEAHSQ RIV-BEAHSQ	191 -5 QO_KIGVQ NQ-LIGVQ GA_KVGIQ SQ-KIGVQ KQ-LIAIQ GG_KAGIQ GQ-KAGIQ GQ-KTAIQ NQ-VAIQ NQ-VAIQ
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 27 SEQ 30	101 2	111	1213 TDYHIAHL TFWEWAHL TNYHLAHL TPYHLHY TLEHFVHY TNELAAV TDFHLVHL TDEHLVHL TDYHLVHL TDYHLVHL	131	MLIEATAVQP MLIEATAVQP VFIEATAVQP MIEATAVSP TIVESTAVSP TILESIFVSE TIFEATGVLP LILTENVGVD TUVEATAVSP SMVEATAVSP SMVEATAVAN	1514 E-GRITPQDV E-GRITPQDV E-GRISPNDS E-GRITPODV E-GGISPHOL N-SGLSIHDL N-SGLSIHDL N-GRISPEDS E-GRISPNDS E-GRISPNDS R-GRISPEDV H-GRITPQDV	161GLMKDSGLMKDSGLMCDSGLMCDSGLMCDSGLMCDSGLMCDSGLMCDSGLMCDSGLMCDSGLMCDSGLMCDS	L71QIAPMRQIEPLK TTSEQFLGLKQAEKLKQAISLA	RVI-DEVHSQ RVI-EEVHSQ RVI-EEVHSQ RIV-DYAHSQ RIV-DYHSQ RIV-DYHSQ RIV-BEAHSQ RIV-BEAHSQ RIV-BEAHSQ	191 -5 QO_KIGVQ NQ-LIGVQ GA_KVGIQ SQ-KIGVQ KQ-LIAIQ GG_KAGIQ GQ-KAGIQ GQ-KTAIQ NQ-VAIQ NQ-VAIQ
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33	101 2 YSA	111	121 TD-YHIAHL TP-WHEAHL TD-YHIAHL TD-YHIAHL TD-YHIAHL TD-YHLHL TD-FHLVHL TD-FHLVHL TD-FHLVHL TD-WHLVHL TD-WHLVHL TD-WHLVHL	GGIAQRGPGL GGIAQRGPGL GGIAQRGPGL GGIAQRGPGL GSEAVRGPGL GSFAVRGPGL GSFALRGVPL YATTARGBU GQFALHGTAL GAMGHRGPGL GQFALHGTAL GQFALHGAAL GGIIQRGPGL	MLIEATAVQP IMVERTAVEP VFIERTAVEP MIEATSVS P TIVESTAVS P TIVESTAVS P LILTENVQVD TIVEATSVTP VMVEATAVS A SMVEATAVEA	1514 E-GRITPQDV E-GRITPQDV E-GRITPQDV E-GRISPNDS E-GRITPQDV E-GRISPNDS HAHKGOAHDI N-GRISPEDS E-GRISPNDS E-GRISPNDS H-GRISPEDV H-GRISPEDV		171	RVI-DEVHSQ RVI-EEVHSQ RVI-EEVHSQ RVI-DEVHSQ EIV-DYAHSQ RIV-DYTHSQ RIV-DYTHSQ RIV-DEPAHSQ RIV-EEAHSQ RIV-EEAHSQ RIV-DETHISQ RIV-DETHISQ RIV-DETHISQ RIV-DETHISQ	191 -5
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 15 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 33 SEQ 33 SEQ 33 SEQ 35	101 2 YSA YSA YSCE YSA	111	121	131	MLI EATAVQP IMVERTAVEP WIELTAVQP MILEATSVSP TIVESTAVSP IILESIEVSE TIFEATGVLP VINCENTAVEA SMVERTAVEA SMVERTAVOA IVTEVNAVSP IVTEVNAVSP SMVERTAVOA	1514 E-GRITPQDV E-GRITPQDV E-GRITPQDV E-GRITPQDV E-GGLSPHOL N-GRITPECS E-GRISPEDS R-GRISPEDS R-GRISPEDS E-GRISPEDS E-GRISPEDS E-GRISPEDA		171QIAPMRQIEPLK TTSEGFLGLKQAFLKQAHSLRQAHSLRQIAPLKQIAPLKQIAPLKQIAPLKQIAPLKQIEPLKQLEPLKQLEPLK	181	191 -5
SEQ 3 SEQ 6 SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 24 SEQ 33 SEQ 33 SEQ 33 SEQ 33 SEQ 33	101 2	111	TD-YHIAHL TP-WEWNIL TD-YHIAHL TD-YHIAHL TD-YHIAHL TD-YHIAHL TL-FHFVHY TL-FHFVHY TD-FHLVHL TD-FHLVHL TD-YHLVHL TD-WHLVHL TD-WHLTHL TD-WHLTHL TD-WHLTHL TD-WHLTHL TD-WHLTHL TD-WHLTHL TD-WHLTHL	GGIAGGEGL GGIAGGEGL GGIAGGEGL GGIAGGEGL GGIAGGEGL GSFALRGYEL YATTARGOWG GGFALHGTAL GAMGMRGFGG GGITGRGFGL GGITGRGFGL GGITGRGFGL GGITGRGFGG	MLIERTANOP UNVERTANOP VFIERTANOP WHIERTANOP MILERTSWSP TIVESTRANSP TIFERTGULP LILTENOWOD TIVERTSWTP VMVERTAVSP SMVERTAVGR TOTEVERTANOP IVTEVNAVSP SMVERTANOP	1514 E-GRITPODV E-GRITPODV E-GRITPODV E-GRITPODV N-GRITPODV N-GRITPECS HAHKGOAHDI N-GRISPEDD E-GRISPEDD H-GRISPEDP E-GRISPEDP E-GRISPEDP E-GRISPEDP E-GRISPEDP H-GRITPODV E-GRISPEDP H-GRITPODV E-GRITPEDP	161	171	RVI-DFVHSQ RVI-EFWHSQ RVI-EFWHSQ RVI-EFWHSQ RVI-DFVHSQ RIV-DFIHSQ KMWADARAIN RIV-DFVHSQ RIV-DFHSQ RIV-DFHSQ RIV-DFHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ	191 -5
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 24 SEQ 27 SEQ 33 SEQ 33 SEQ 33 SEQ 33 SEQ 38 SEQ 38 SEQ 38	101 2	111QDGHMDDGHM DPSSPHYGALBUGHMSPTDNQASPTDNQASPGHLDQGHLDQGHLNDGYA	121 TD-YHIAHL TN-YHLAHL TN-YHLAHL TN-YHLAHL TD-YHLAHL TD-YHLHL TN-EHFVHY TD-EHLVHL TD-EHLVHL TD-EHLVHL TD-WHLVHL TD-WHLVHL TD-WHLWHL TD-WHCHL TD-WHCHL TM-WHTHM	GGIAGREGEL GGIAGROFGE GGIAGROFGE GGIAGROFGE GGIAGROFGE GGIAGROFGE GSIANREPGI GSFALRGYFL YATTARGOWG GGFALHGTAL GMFMRGFGE GGFALHGAAL GGIIGRGFGL GGIIGRGFGL	MLIERTANOP WILERTANOP VFIERTANOP WHIERTSYS TIVESTAVS TIFERTANOP LILITANOVO TIVERTAVS SAVERTAVS SAVERTAVS SAVERTAVON TVESTAVON TVESTAVON TVESTAVON TVESTAVON	1514 E-GRITPQDU B-GRISPNDS B-GRISPNDS B-GGLSPHDL N-GRISTEDS HAHKGDAHDI N-GRISPEDS B-GRISPEDS H-GRISPEDS H-GRISPEDS B-GRISPEDS H-GRISPEDS B-GRISPEDS H-GRITPQDV C-GRISPEDV		171	181 RVI-DFVHSQ RVV-EEMHAQ RVV-EEMHAQ RVI-DFVHSQ RIV-DFVHSQ RIV-DFVHSQ RIV-DFVHSQ RIV-DFVHSQ RIV-DFVHSQ RIV-TFAHSQ RIV-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ RVIT-TFAHSQ RVIT-TFAHSQ RVIT-TFAHSQ RVIT-TFAHSQ RVIT-TFAHSQ RVIT-TFAHSQ	191 -5
SEQ 3 SEQ 6 SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 24 SEQ 33 SEQ 33 SEQ 33 SEQ 33 SEQ 33	101 2	111QDGIMQDGIM	TD-YHIAHL TP-WEWNIH TD-YHIAHL TD-YHIAHL TD-YHIAHL TL-FHFWY TL-FHFWY TL-FHFWY TD-WHUWH NN-FELANV TD-FHLWH TD-FHLWH TD-WHUWH TD-WHUWH TD-WHUWH TD-WHUWH TD-WHUWH TD-WHUWH TD-WHUWH TD-WHUWH	GGIAGGEGL GGIAGGEGL GGIAGGEGL GGIAGGEGL GGIAGGEGL GGIAGGEGL GSFALRGYEL YATTARGOWG GGFALHGTAL GAMGMRGPGL GGITGREGL GGITGREGGL GGITGREGGL GGITGREGGL	MLIERTANQP UNVERTANGP VFIERTANGP MIERTSYSP TIVESTRYSP TIVESTRYSP TIFERTGYLP LILTENCYOP TIVERTSYTP WWERTANGR SMYERTANGR TOTEWARD TOTEWARD TOTEWARD TOTEWARD TOTEWARD TOTEWARD TOTEWARD TOTEWARD TOTEMARD	1514 E-GRITPODV E-GRITPODV E-GRITPODV E-GRITPODV N-GRITPODV N-GRITPECS HAHKGOAHDI N-GRISPEDS E-GRISPEDS E-GRISPEDS H-GRITPODV E-GRISPEDA H-GRITPODV E-GRISPEDA H-GRITPODV E-GRISPEDA H-GRITPODV E-GRISPEDA	161	171	RVI-DFVHSQ RVI-EFWHAQ RVI-EFWHAQ RVI-DFVHSQ RIV-DFIHDQ RIV-DFIHDQ RIV-DFIHSQ RIV-DFHSQ RIV-DFHSQ RIV-DFHSQ RIT-TFAHSQ RIT-TFAHSQ KVY-EFAHSQ KVY-EFAHSQ KVY-EFAHSQ KVY-EFAHSQ KVY-EFAHSQ KVY-EFAHSQ KVY-EFAHSQ KVY-EFAHSQ KVA	191 -5
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 22 SEQ 22 SEQ 22 SEQ 27 SEQ 30 SEQ 35 SEQ 35 SEQ 40 SEQ 40	101 2	PADE SERGE	121 TD-YHIAHL TP-WHWANH TN-YHLAHL TD-YHLAHL TD-YHLAHL TD-YHLH TD-FHEVHY TD-FHEVHY TD-FHLVHL TD-FHLVHL TD-WHLVHL TD-WHLVHL TD-WHCHL TM-WHTHM TM-WHTHM TP-WHTHM	GGIAQREPGL GGIAQROPGE GGIAQROPGE GHIALKCAGL GGIAQREPGI GSIPARREPGI GSIPARREPGI QFALHOTAL GQFALHOTAL GQFALHOTAL GGIIQREPGL GGIIQREPGL GGIIQREPGL GGIIQREPGL GGIIQREPGL GGIIQREPGL GGIIQREPGL GGIIQREPGL GGIIQREPGL GGIIQREPGL	MLIERTANOP MLIERTANOP VFIERTANOP WHIERTSNEP TIVESTANSP TIVESTANSP TILESIFVSE TIVESTANSP TIVESTANSP MVERTANSP SMVERTANOP TVESTANOP TVESTANOP TVESTANOP TVESTANOP TVESTANOP	1514 E-GRITPQDU M-GRISPNDS E-GRITPGDV E-GLISPHDL N-GRISPNDS H-GRISPNDS E-GRISPNDS E-GRISPNDS H-GRISPNDS E-GRISPNDS E-GRITPRDS	161	171	181	191 -5
SEQ 3 SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 14 SEQ 16 SEQ 19 SEQ 24 SEQ 24 SEQ 27 SEQ 30 SEQ 33 SEQ 35 SEQ 35 SEQ 34 SEQ 34 SEQ 34 SEQ 35 SEQ 35 SEQ 36 SEQ 38 SEQ 38 SEQ 38 SEQ 42 SEQ 42 SEQ 42 SEQ 85	101 2	111QDGIM	121 TDYHIAHL TPWHANHI TNYHLAHL TPYHLIHY TDYHLHI TPYHLHI TDYHLHI TDYHLHI TDYHLHI TDYHLHI TDYHLHI TDYHLHI TDWHLWHL TPWHLWHL IPTEQLVQLY QPWHEAHY	GIAGREFEL GGIAGREFEL GGIAGREFEL GGIAGREFEL GGIAGREFEL GGIAGREFEL GGIAGREFEL GGIAGREFEL GGFANGEFEL GGFANGEFEL GGFALHGTAL GGIAGREFEL GGIAGREFEL GGIAGREFEL RRWGGGEMGQ GGLAGREFEL RRWGGGEMGQ GGLAGREFEL RRWGGGEMGQ GGLAGREFEL	MLIERTANQE MLIERTANGE MIERTANES TIVESTANSE TIVESTANSE TIESTANSE TIESTANSE TIESTANSE TIESTANSE TIESTANSE SAVERTANSE SAVERTANSE TOTEVN	1514 E-GRITPODL N-GRISPNDS E-GRITPODV E-GGLSPHDL N-GRISPLDS HAHKGOAHDI N-GRISPEDS R-GRISPEDV H-GRITPEDV E-GRISPEDV E-GRISPEDV E-GRISPEDV E-GRISPEDV E-GRISPEDV E-GRITPEDV E-GRITPEDV E-GRITPEDV E-GRITPEDV E-GRITPEDV	161	171	181	191 -5
SEQ 3 SEQ 6 SEQ 8 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 23 SEQ 33 SEQ 33 SEQ 33 SEQ 35 SEQ 42 SEQ 42 SEQ 42 SEQ 44 SEQ 44 SEQ 48 SEQ 85	101 2	PART STATE OF THE PROPERTY OF	121 TD-YHIAHL TP-WHANAHL TN-YHLAHL TD-YHLAHL TD-YHLHY TL-FHFVHY TL-FHFVHY TD-FHLVHL TD-FHLVHL TD-FHLVHL TD-WHLTHL TD-WHLTHL TD-WHLTHL TM-WHRTHM TM-WHRTHM TPT-WHRAHL TPT-WHRAHL TPT-WHRAHL TPT-WHRAHL TPT-WHRAHL TPT-WHAHL	GGIAGREGEL GGIAGREGEL GGIAGREGEL GGIAGREGE GGIAGREGEL GGIAGREGEL GSIFALRGVPL YATTARGOWG GGFALHGTAL GMENTGEGEL GGFALHGAAL GGIIGREGEL GGIIGREGEL GGIIGREGEL GGIIGREGEL GGIIGREGEL GGIAGREGEL GGLAGREGEL GSIAGREGEL GSIAGREGEL GSIAGREGEL GSIAGREGEL GSIAGREGEL GSIAGREGEL GSIALHGVGN	MLIERTANQE WILERTANGE WIERTANGE TIVESTANSE TIVESTANSE TIVESTANSE TIVESTANSE TIVESTANSE TIVESTANGE MARCHANGE MARCHANGE TOVESTANGE SWIERTANGE TOVESTANGE TOVESTANGE TOVESTANGE TOVESTANGE TOVESTANGE TOVESTANGE TOVESTANGE TO	1514 E-GRITPQDU M-GRISPNDS E-GRITPGDV E-GGLSPHDL N-GRITPECS HAHKGDAHDI N-GRISPEDS E-GRISPNDS E-GRISPND	161	171	181 RVI-DFVHSQ RVV-EFMHAQ RVV-EFMHAQ RIV-DFVHSQ RIV-DFVHSQ RIV-DFVHSQ RIV-DFVHSQ RIV-DFVHSQ RIV-DFVHSQ RIV-DFVHSQ RIV-TFAHSQ LV-EFAHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ RIT-TFAHSQ	191 -5
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SEQ 6	TRUBGREATT	VAPW	ISAN	DTASEKMGGW	PGRVKGPTNV	P	FTVKNPVP	KE	MTKODIE	DLKT-AWVAA
SEQ 8	LAHAGRKASA	VAPW	-LAAOAGKSS	LKADESVGGW	PADVVGPSGG	EEHIF	SPEEDAYWVP	RA	LSTAEVR	QVVA-AFAKS
SEQ 10	IAHAGRKASN	IAPW	EMMKG	IVATEKVGGW	PORVIGESTY	6	EHETEPTP	ка	MTKDDIE	QEKR-DWEDA
SEQ 12	LGHGGRKASG	QPLF	LHLE	QVADKSVNGF	ADKAVAPSAL	A	FRPNGNLP	VPNE	LTKDEIK	RVVK-DFGAA
SEQ 14	LNHAGRKIVE	GVPF		QQIQHGW	QEHCVGPSTE	P	FSDSHNTP	RE	LIVNEIN	SIVE-DEANA
SEQ 16	LAHAGRKAST	KAPW	HYQRGKS	ELAGPEQGGW	PENVWAPSAI	5	-YNEETFPFP	KE	HIDSALM	ELVE-AWKAS
SEQ 19	INHPGRQSPM	GAGT		KGTM	E-KAVAPSPV	P	-LVLGEAEVP ESEDEPNP	KELSKYLEGT	PREHIVACIA	GLVT-SFVDA
SEQ 22 SEQ 24	LAHAGRKAST	TAPY	SGEIRPREGE	TVATEROGGW	ENDVYGPFTN	E	DRWDENHAQP	HK	LTEKOYD	ELVD-KEVVA
SEQ 27	LAHAGRKAST	LAPW	ITEARGK	ALAGESENGW	PDDVVAPSAI	P	YTKDWATP	RE	LTTE.SR	VWVK-KFAES
SEQ 30	LSHAGRKASC	VSPW	LSVN	AVAAEEVGGW	PDNIVAPSAI	A	QENGVNPVP	KA	FTKEDIE	GTK2-DAAEY
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SEQ 40 SEQ 42	LAHAGRKAST	VAPW		DAMGEDANGE	PEDVVGPSGG	EDETWDERSS	WNEKHAVP SDPSGGYYAP	RE	LSVRETK	EMVO-DWATA
5EQ 44	VCHECKUPEC	SV0	OHPTSASD	VOLKOEM			FGSKFGVP	RP	ATKEDIK	AVIE-GFAHT
SEQ 83	IGHAGRKASC	VAPN	LDAG	LAAEKAAGGW	PDDVVGPSNE	P	FAPGYPTP	RA	ITLEEIE	QLKE-DFVSG
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A£4875	I.WATGRAADP	DVLA	DMKD	LISSS-AVPV	EEKGP		LP	RA	LTEDEIQ	QCIA-DFAQA
A£4961	LWHAGRATIP	QMTG	SPAVSAS	ATVWDSPTEC	YSHPP	VGST	EPVRYADHPP	IE	LTIP-HL	KQTIRDYCNA
Ca2460	LWYLGRVANP	KDLK	DAGLPL	IGPSAVYW	DEESE		Klaksvgnel	RE	LTEKEID	HIVEVEYPNA
Nc4452	LWSLGRAANP	EVLA	KEGGLK	LKSSS-AVPM	EEGAP		VP	EE	MTVAEIK	ERVA-EYAAA
ScOYE1	LWVLGWAAFP	DNLA	RDG-LR	YDSASDNVFM	DAEQE		EKAKKANNPQ	KS	TEKDETK	OVAK-EAAON
SCOYE2 SCOYE3	LWVLGWAAFP	DI.TH	RDG-LR	TOSASONATM	MAEQE		EKAKDANNLE	NS	LTKDDIK	OYIK-DYIHA
A36990	LWYLGRVANA	KDLK	DSG-LP	LIAPS-AVYW	DENSE		KLAKEAGNEL	RA	LTEEEID	HIVEVEYPNA
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SEQ 3	TKRAIAA-GA	DEVEINANG	YLLSSFLSP-	-AANNRTDQY	G-GSFENRIR	LSLEIAQUTR	DAVGPHVP	VFLR	8 ****- ISAS-DWCE-	ETLPEQ
SEQ 6	TKRALAA-GA VKRAVKA-GA	DEVEIHNANG DETEIHNANG	YLLSSFLSP- YLLMSFLSP-	-AANNRTDQY	G-GSFENRIR G-GSFENRIR	LSLEIAQLTR LSLEIAKLTR	DAVGPHVP	VFLR	8 ****- ISAS-DWCE- VSAT-DWLE-	ETLPEQ
	TKRAIAA-GA VKRAVKA-GA ARLAVQA-GV CKRATAA-GA	DEVEINNANG DFIEINNANG DVIEINGANG DETEINNANG	YLLSSFLSP- YLIMSFLSP- YLIMSFLSP- YLLSSFLSP-	-AANNRTDQY -AVNTRTDEY -VTNKRTDAY -SSNTRTDEY	G-GSFENRIR G-GSFENRIR G-GSFENRTR G-GSFENRIR	LSLEIAQLTR LSLEIAKLTR IVREVAAAIR LSLEIAQVTR	DAVGPHVP ENVPKDMP AVIPEGMP DAVGPNVP	VFLRVFLRVFLR	ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE-	ETLPEQ EVQPNKP -GQPVAAESG
SEQ 6 SEQ 8	TKRALAA-GA VKRAVKA-GA ARLAVQA-GV CKRALAA-GA ARRAVELSGF	DFVEIHNAHG DFIEIHNAHG DVIEIHGAHG DEIEIHNAHG DAVEIKGAHG	YLLSFLSP- YLIMSFLSP- YLINEFLSP- YLLSSFLSP- YLINEFYSP-	-AANNRTDQY -AVNTRTDEY -VTNKRTDAY -SSNTRTDEY -ISNKRTDEY	G-GSFENRIR G-GSFENRIR G-GSFENRTR G-GSFENRIR G-GSFENRIR	LSLEIAQUTR LSLEIAKUTR IVREVAAAIR LSLEIAQVTR FLKEVIDSVK	DAVGPHVP ENVPKDMP AVIPEGMP DAVGPNVP SSIPNDVP	VFLRVFLRVFLRVFLR	ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAA-ENSP-	ETLPEQEVQPNKP -GQPVAAESGETLPEE
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14	TKRAIAA-GA VKRAVKA-GA ARIAVQA-GV CKRAIAA-GA ARRAVEISGF AWRAVEISKF	DFVEIHNAHG DFIEIHNAHG DVIEIHGAHG DFIEIHNAHG DAVEIKGAHG DAVEIKGAHG	YLLSSFLSP- YLIMSFLSP- YLINEFLSP- YLINEFYSP- CLIHQFLSK-	-AANNRTDQY -AVNTRTDEY -VTNKRTDAY -SSNTRTDEY -ISNKRTDEY -LITNKRADQY	G-GSFENRIR G-GSFENRIR G-GSFENRTR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRYR	LSLEIAQLTR LSLEIAKLTR IVREVAAAIR LSLEIAQVTR FLKEVIDSVK FLLQIIENIK	DAVGPHVP ENVPKDMP AVIPEGMP DAVGPNVP SSIPNDVP RKIETP	VFLRVFLRVFLRVFLR	ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAA-ENSP- FPMS-DNCS-	ETLPEQEVQPNKP -GQPVAAESGETLPEE
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16	TKRALAA-GA VKRAVKA-GA ARLAVQA-GV CKRALAA-GA ARRAVEISGF AWRAVEISKF AORALKA-GF	DFVEIHNAHG DFIEIHNAHG DVIEIHGAHG DFIEIHHAHG DAVEIHGAHG DAIEIHCANG DAIEIHCANG	YLLSSFLSP- YLIMSFLSP- YLIMEFLSP- YLINEFYSP- YLIMEFYSP- YLISEFLSP-	-AANNRTDQY -AVNTRTDEY -VTNKRTDAY -SSNTRTDEY -ISNKRTDEY -LINKRADQY -ISNQRTDQY	G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRVR G-GSFENRIR	LSLEIAQLTR LSLEIAKLTR IVREVAAAIR LSLEIAQVTR FLKEVIDSVK FLLQIIENIK VLREIISAVR	DAVGPHVP ENVPKDMP AVIPEGMP DAVGPNVP SSIPNDVP RKIETP SVIPEDMP	VFLRVFLRVFLRVFLRVFLRVFLR	ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAA-ENSP- FPMS-DNCS- VSAT-EWME-	ETLPEQEVQPNKP -GQPVAAESETLPEEDPEDPE
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19	TKRALAA-GA VKRAVKA-GA ARLAVQA-GV CKRALAA-GA ARRAVEISGF AWRAVEISKF AQRALKA-GF ARTTAEA-GF	DEVEIHNAHG DFIEIHNAHG DVIEIHGAHG DFIEIHNAHG DEVEIHGAHG DAVEIHGAHG DLIEIHAAHG DLIEIHAAHG	YLLSSFLSP- YLIMSFLSP- YLIMSFLSP- YLLSSFLSP- YLIMSFYSP- CLIHQFLSK- YLISEFLSP- YLLAQFLSK-	-AANNRTDQY -AVNTRTDEY -VTNKRTDEY -ISNKRTDEY -ITNKRADQY -ISNQRTDQY -KTNRRAGDEY	G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR	LSLEIAQLTR LSLEIAKLTR IVREVAAAIR LSLEIAQVTR FLKEVIDSVK FLLQIIENIK VLREIISAVR IVGEIIKECR	DAVGPHVP ENVPKDMP AVIPEGMP DAVGPNVP SSIPNDVP RKIETP RVIPEDMP RQVTEAVGEE	VFLRVFLRVFLRVFLRVFLRVFLRLFLK	ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAA-ENSP- FPMS-DNCS- VSAT-EWME- LNSA-DWQA-	ETLPEQEVQPNKP -GQPVAAESGETLPEEDPETGQPGRDGKEEEE
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22	TKRAIAA-GA VKRAVKA-GA ARIAVQA-GV CKRAIAA-GA ARRAVEISGF AWRAVEISKF AQRAIKA-GF ARITAEA-GF AKRAIEA-GV	DFVEIHNAHG DFIEIHNAHG DVIEIHGAHG DAVEIHGAHG DAVEIHGAHG DAIEIHCANG DLIEIHAAHG DVSVEIHAAHG DIIEIHGAHG	YLLSSFLSP- YLIMSFLSP- YLIMSFLSP- YLIMSFYSP- CLIHQFLSK- YLIMSFLSP- YLIAQFLSK- YLITEFLSP-	-AANNRTDQY -AVNTRTDEY -VTNKRTDEY -SSNTRTDEY -ISNKRTDEY -LTNKRADQY -ISNQRTDQY -KTNRRGDEY -LSNKRTDKY	G-GSFENRIR G-GSFENRIR G-GSFENRTR G-GSFENRTR G-GSFENRTR G-GSFENRTR G-GSAENRAR G-GSAENRAR	LSLEIAQLTR LSLEIAKLTR IVREVAAAIR LSLEIAQVTR FLKEVIDSVK FLLQIIENIK VIREIISAVR IVGSIIKECR VLIDIIKAVR	DAVGPHVP ENVPKDMP AVIPEGMP DAVGPNVP SSIPNDVP RKIET RVIPEDMP RQVTEAVGEE AVIPEEM	VFLRVFLRVFLRVFLRIFLKIFLKLEVR EAKKFVVGIKPLEVR	ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAT-EWIE- ISAA-ENSP- FPMS-DNCS- VSAT-EWME- LNSA-DWQA- ISAT-EWME-	ETLPEQEVQPNKP -GQPVAAESGDPEDPETGQPTGQPTAGEP
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24	TKRAIAA-GA VKRAVKA-GA ARLAVQA-GV CKRAIAA-GA ARRAVEISGF AWRAVEISKF AQRALKA-GF ARTTAEA-GF AKRAIEA-GV AKRAVEI-GF KKRANEI-GF	DEVEINAHG DFIEIHNAHG DFIEIHNAHG DFIEIHNAHG DAVEIHGAHG DALEIHCANG DLIEIHAAHG DVIEIHGAHG DVIEIHGAHG DVIEIHGAHG	YLLSFLSP- YLIMSFLSP- YLINEFLSP- YLINEFYSP- CLIHQFLSK- YLISEFLSP- YLLAQELSK- YLITEFLSP- YLISSTVSPA	-AANNRTDQY -AVNTRTDEY -VTNKRTDEY -SSNTRTDEY -ISNKRTDEY -ISNKRTDEY -LTNKRADQY -ISNQRTDQY -KTNRRGDEY -KTNRRGDEY -LSNKRTDKY	G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRVR G-GSFENRVR G-GSFENRVR G-GSFENRTR G-GSFENRTR G-GSFENRTR G-GSFENRTR	LSLEIAQLTR LSLEIAKLTR IVREVAAAIR FLKEVIDSVK FLLQIIENIK VLREIISAVR IVGEIIKECR VLIDIIKAVR FPMEVVHSVR	DAVGPHVP ENVPKDMP AVIPEGMP SSIPNDVP SSIPNDVP RKIETP SVIPEDMP RQVTEAVGSE AVIPEEM KAIPDSMP	VFLRVFLRVFLRVFLRIFLRIFVR EAKKFVVGIK	LSAT-DWLE- ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAA-ENSP- FPMS-DNCS- VSAT-EWME- LNSA-DWQA- ISAT-EWME- VTAT-DWLE-	ETLPEQEVQPNKP -GQPVAAESG
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22	TKRALAA-GA VKRAVKA-GA ARLAVQA-GV CKRALAA-GA ARRAVEISGF AWRAVEISKF AQRALKA-GF ARRALEA-GV AKRAVEI-GF AKRALAA-GF AKRANAA-GF	DEVEIHNAHG DFIEIHNAHG DVIEIHGAHG DVIEIHGAHG DALEIHCANG DALEIHCANG DLIEIHAAHG NGVEIHAAHG DVIEIHGAHG DVIEIHGAHG DVIEIHAAHG DVIEIHAAHG	YLLSFLSP- YLIMSFLSP- YLIMSFLSP- YLISFLSP- YLIMSFYSP- CHIHQFLSK- YLISEFLSP- YLISEFLSP- YLISSTVSPA YLIMOFLSS-	-AANNRTDQY -AVNTRTDEY -VTNKRTOAY -SSNTRTDEY -ISNKRTDEY -ISNGRTDQY -KTNRRADQY -KTNRRADQY -KTNRRADQY -KTNRKTDKY -SNKRTDKY -SNKRTDKY -YSNQRTDCY	G-GSFENNIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSAENRAR G-GSAENRAR G-GSAENRAR G-GSFENRIR	LSLEIAGUTR LSLEIAKUTR IVREVAAAIR LSLEIACUTR FLKEVIDSVK FLLQIIENIK VLREIISAVR VLREIISAVR VLGIIKECR VLIDIIKAVR FPMEVVHSVR	DAVGPHVP ENVPKDMP AVIPEGMP DAVGPNVP SSIPNDVP SVIPEDMP RQVTEAVGBE AVIPEEM KAIPDSMP	VFLRVFLRVFLRVFLRVFLR	LSAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAA-ENSP- FPMS-DNCS- VSAT-EWME- LNSA-DWQA- LSAT-EWME- VTAT-DWLP-	ETLPEQ
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33	TKRAIAA-GA VKRAVKA-GA ARLAVQA-GV KKRAIAA-GA ARRAVEISKF AQRAIKA-GF ARITAEA-GZ AKRAIEA-GV AKRAVEI-GF AKRAVEI-GF AKRANA-GF AKRAHA-GF	DFVEIRNAHG DFIEIRANG DFIEIRANG DFIEIRANG DETEIRANG DAVEIRGANG DALEIRANG DLIEIRANG NGVEIRANG DVIEIRANG DVIEIRANG DVIEIRANG DVIEIRANG DVIEIRANG	YLLSSFLSP- YLIMSFLSP- YLIMSFLSP- YLIMSFYSP- CLIMGFLSK- YLIGEFLSP- YLLAGELSK- YLITEFLSP- YLISSTYSPA YLLHQFLSS-	-AANNRTDQY -AVNTRTDEY -VYNKRTDAY -SINTRTDEY -ISNKRTDEY -ISNKRTDEY -ISNKRTDEY -KTNRRGDEY -KTNRRGDEY -LSNKRTDKY -LSNKRTDKY -TTNDRNKY -VSNQRTDEY	G-GSFENNIR G-GSFENRIR	LSLEIAQUTR LSLEIAKUTR LYREVAAAIR LSLEIAQVTR FLKEVIDSVK FLLQIIENIK VLREIISAVR IVGGIIKBCR VLIDIIKAVR FPMEVVHSVR	DAVGPHVP ENVEKDMP AVIPEGMP SIENDVP RKIET RQVTEAVGE AVIPEM AVIPEM AAIPETTE AAIPETTE	VFLRVFLRVFLRVFLRVFLR	ISAS-DWCE- VSAT-DWLE- VSAT-DWLE- VSAT-DWIE- ISAN-ENSP- PPMS-DNCS- VSAT-EWME- LNSAN-DWQA- ISAT-EWME- VTAT-DWLE- VSAT-DWLE-	ETLPEQEVQPMKP -GQPVAAESG
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33 SEQ 33 SEQ 33	TKRAIAA-GA VKRAVKA-GA ARLAVQA-GA ARRAVEISGF AWRAVEISKF AQRALKA-GF ARTTRAA-GF AKRAIEA-GV AKRAIEA-GV AKRAVEI-GF AKRAIRA-GF	DEVEINNAHG DFIEINNAHG DFIEINNAHG DVIEINGAHG DAVIEGAHG DAIEINCANG DAIEINCANG DLIEINGAHG DVIEINGAHG DVIEINGAHG DVIEINAAHG DVIEINAAHG	YLLSFLSP- YLIMSFLSP- YLIMSFLSP- YLIMSFLSP- YLIMSFLSP- YLISEFLSP- YLISEFLSP- YLITEFLSP- YLITEFLSP- YLITEFLSP- YLIGSTVSPA	-AANNRTDQY -AVNTRTDEY -VTMKRTDEY -SSNTRTDEY -ISNKRTDEY -ISNGRTDQY -KTNRRADQY -KTNRRADGY -KTNDRNDKY	G-GSFENRIR	LSLEIAQUTR LSLEIAKUTR LSLEIAVATR LSLEIAQVTR FLKEVIDSVK FLLQIIENIK VLREIISAVR IVGSIIKECR VLIDIIKAVR FPMEVVHSVR VVLEILDLIR	DAVGPHVP ENVEKDHP DAVIPEGMP DAVGPNVP SSIRNDVP SVIPEDMP RQVTEAVGEE KAIPDSMP KAIPDSMP AAIPETTP	VFLRVFLRVFLRVFLR	ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAT-EWLE- VSAT-DWIE- ISAN-ENSP- VSAT-EWWE- LNSA-DWQA- VTAT-DWLE- VSAT-DWLE- VSAT-DWFEF	ETLPEQEVQPNKP
SEQ 6 SEQ 8 SEQ 10 SEQ 10 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33 SEQ 35 SEQ 38	TKRAIAA-GA VKRAVKA-GA ARIAVQA-GA ARIAVQA-GA ARRAVEISKF AQRAIKA-GF AKRAIEA-GV AKRAVEI-GA KRANIEA-GF AKRAIHA-GF KRAIHA-GF	DEVEINMANG DFIEIRMANG DFIEIRMANG DVIEINGANG DEVEINMANG DAVEINGANG DAVEINGANG DAVEINGANG DIFFINANG DVIEIRANG DVIEIRANG DVIEIRANG DVIEIRANG DVIEIRANG DVIEIRANG	YLLSFLSP- YLIMSFLSP- YLIMSFLSP- YLIMSFLSP- YLIMSFYSP- CLIHQFLSK- YLIAGELSK- YLIAGELSK- YLIMSFLSP- YLISSTYSP- YLLMQFLSP- YLLMQFLSP- YLLMQFLSP- Y.LMQFLSP- Y.LMQFLSP- Y.LMQFLSP-	-AANNRTDQY -AVMTRTDEY -VYMKRTDAY -SSMTRTDEY -ISMKRTDEY -ISMKRTDEY -ITMKRADQY -ISMKRTDEY -KTMRRAGDEY -KTMRRAGDEY -KTMRRAGDEY -KTMRRAGDEY -LSMKRTDKY -TTMDRNDKY -VSMQRTDEY	G-GSFENRIR	LSLEIAGUTR LSLEIAKUTR LSLEIAGUTR LSLEIAGUTR FLKEVIDSVT FLKEVIDSVT FLLQIIENIK VLREIISAVR VLIGIIKEGR VLIDIIKAVR FPMEVHSVR VVLEILDLIR	DAVGPHVP ENVEKDHP ENVEKDHP DAVGPNVP RKIETP SVIPEDHP RVIEEM AAIPETTF AAIPETTF	VFLRVFLRVFLR	ISAS-DWCE- VSAT-DWIE- ISAT-EWLE- VSAT-DWIE- ISAA-EMS- PWS-DNCS- VSAT-EWME- VTAT-DWLE- VSAT-EWME- VTAT-DWLE- VSAT-DWFEF	ETLPEQEVQPNKP
SEQ 6 SEQ 10 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33 SEQ 35 SEQ 38 SEQ 40	TKRATAA-GA VKRAVKA-GA ARLAVQA-GV CKRATAA-GA ARRAVEIGE AWRAVEISKE AQRAIKKA-GE AKRATEA-GE AKRATEA-GE AKRATEA-GE KKRATA-GE KKRATA-GE KKRATA-GE KKRATA-GE KKRATA-GE KKRATA-GE KKRATA-GE KKRATA-GE	DEVEINANG DEVEINANG DEVEINANG DEVEINANG DEVEINANG DAVETRANG DAVETRANG MGVEINANG DIVIETRANG DVIETRANG DVIETRANG DVIETRANG DVIETRANG DVIETRANG	YLLSFLSP- YLLMSFLSP- YLLSFLSP- YLLSFLSP- YLLSFLSP- YLLSEFLSP- YLLAGELSK- YLITEFLSP- YLLAGELSK- YLITEFLSP- YLLMGFLSP- YLLM	-AANNRTDQY -AVNTRTDEY -VTMKRTDAY -SSMTRTDEY -ISMKRTDEY -ISMKRTDEY -ISMKRTDEY -ISMKRTDEY -ISMKRTDEY -ISMKRTDEY -ISMKRTDEY -ISMKRTDKY -ISMRTDGY -ISMKRTDKY -TTMDRMSKY -VSMQRTDEY -VSMQRTDEY -VSMQRTDEY -RAPPGETST	G-GSFENRIR	LSLEIAGUTR LSLEIAKUTR LSLEIAKUTR LSLEIAGUTR LSLEIAGUTR FLKEVIDSVK FLLQIIENIK VLREIISAVR VLREIISAVR VLIDIIKAVR FPMEVVISVR VVLEILDLIR VVLEILDLIR VVLEIII VVLEIII VVLEIII	DAVGPHVP ENVEKDNE ENVEKDNE DAVGPNVP SSIPNDVP SVIPEDME KAIPDSME KAIPDSME AAIPETTP QH7	VFLRVFLRVFLRVFLR	ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAA-ENSP- FYMS-DNCS- VSAT-EWME- LNSA-DWG- VTAT-DWLE- VSAT-DWFEF	ETLPEQEVQPMKP
SEQ 6 SEQ 10 SEQ 10 SEQ 114 SEQ 16 SEQ 19 SEQ 29 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33 SEQ 35 SEQ 38 SEQ 40	TKRAIAA-GA VKRAVKA-GA ARLAVQA-GA RARAVEISK AQRALKA-GF AKRATEA-GV AKRAVEI-GA KKRAIEA-GF KKRAIHA-GF KKRAIHA-GF VKRALKA-GF VKRALKA-GF	DEVEINMANG DFIEIRMANG DFIEIRMANG DFIEIRMANG DFIEIRMANG DFIEIRMANG DAVEIRMANG DALEIRMANG DIEIRMANG DIEIRMANG DVIEIRMANG	YLLSSFLSP- YLINSFLSP- YLINSFLSP- YLINSFLSP- YLINSFYSP- CLINGFLSK- YLISEFLSP- YLLAGELSK- YLISSTYSPA YLLAGELSK- YLISSTYSPA YLLAGELSP- YLLHSFICH- YLLHSFICH- YLLHSFICH- YLIHSFLSP-	-AANNRTDQY -AVNTRTDEY -VYTNKRTDAY -SSNTRTDEY -ISNKRTDEY -LINKRADQY -LINKRADQY -KINKRAGEY -KINKRAGEY -LSNKRTDKY -VSNQRTDCY -VSNQRTDCY -VSNQRTDEY -VSNQRTDEY -VSNQRTDEY -VSNQRTDEY -RATPGETST	G-GSFENRIR	LSLEIAQUTR LSLEIAKUTR LSLEIAQUTR LSLEIAQUTR LSLEIAQUTR LSLEIAQUTR FLKEVIDSVK FLLQUIENIK VUREIISAVR VUREIISAVR FPMEVVHSVR VVLEILDLIR VVLEII LTMESARRCP LLIEIVTAVR	DAVGPHVE ENVEKDHE DAVGPNVE SIENDVE RKIET RKIET RQVTEANGEE AVIFEEM	VFLRVFLRVFLR	ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DWIE- ISAN-EWS- VSAT-EWKE- VSAT-EWKE- VTAT-DWLE- VTAT-DWLE- VTAT-DWLE- VSAT-DWFEF	ETLPEQEVQPNKP
SEO 6 SEO 10 SEO 10 SEO 12 SEO 14 SEO 16 SEO 19 SEO 22 SEO 24 SEO 27 SEO 30 SEO 33 SEO 35 SEO 35 SEO 40 SEO 40	TKRATAA-GA KKRAVKA-GA ARLAVQA-GV CKRATAR-GA ARRAVEISGE AWRAVEISKE ARTTAEA-GE AKRATEA-GE AKRATEA-GE AKRATHA-GE KRAIHA-GE KRAIHA-GE KRAIHA-GE KRAIHA-GE KRAIKA-GE AKRAVKA-GE AKRAVKA-GE	DEVEINANG DETEINANG DFIEINANG DFIEINANG DFIEINANG DFIEINANG DAVEIRGANG DAVEIRGANG DAVEIRANG DIFFIRANG DVIEIRANG	YLLSSFLSP- YLLMSFLSP- YLLMSFLSP- YLLSSFLSP- YLLSSFLSP- YLLSSFLSP- YLLTSEFLSP- YLLTSEFLSP- YLLMGFLSP	-AANNTOOY -AANNTOOY -AVNTRTOBY -VTWKRTDAY -SSWTRTDEY -ISNKRTDEY -ISNKRTDEY -ISNKRTDEY -ISNGRTOOY -KTMRRGDEY -VSMQRTOEY -VSMQRTOEY -VSMQRTOEY -VSMQRTOEY -VSMQRTOEY -RAPFGFTST -ITMRRTDSY -TTMQRTDEY -TMQRTDEY	G-GSFENNIR G-GSFENNIR G-GSFENNTR G-GSFENNTR G-GSFENNTR G-GSFENNTR G-GSFENNTR G-GSFENNTR G-GSFENNTR G-GSFENNTR G-GSFENNIR	LSLBIAGUTR LSLBIAKUTR LVREVARAIR LSLBIAGVER FLKEVIDSVK FLLQIIENIK VVAREIISAVR IVGSIIKECK VVLBIIKAVR FPMEVVHSVR VVLEILDLIR VVLEILDLIR LITMESARFCER LITELYTAVR LILELYTAVR LILELYTAVR	DAVGPHVE ENVEKDME AVI PEGMP AVI PEGMP SSI ENDVP RKIETP SVI PEDMP RQVTEAVGSE AVI FEEM KAI PDSMP AAI PETTP		ISAS-DWCE- VSAT-DWLE- ISAN-EWLE- VSAT-DWLE- VSAT-EWLE- VSAT-EWME- LNSA-EWME- VSAT-EWME- VTAT-OWLE- VSAT-DWFEF LISST-EWME- INSW-EFQE- ISGT-DWLE-	ETLPEQEVQPKCPEVQPKCP
SEQ 6 SEQ 10 SEQ 10 SEQ 114 SEQ 16 SEQ 19 SEQ 29 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33 SEQ 35 SEQ 38 SEQ 40	TKRAIAA-GA KIRAWKA-GA ARLAWQA-GV CKRAIAA-GA ARRAWEISGF AWRAWEISGF AWRAWEISGF AWRAWEISGF AWRAWEISGF AWRAWEISGF AWRAWEISGF AWRAWEI-GA KRAIKA-GF AKRAIHA-GF AKRAIHA-GF AKRAIHA-GF AKRAWKA-GF AKRAWKA-GF VRRAWA-GF VRRAWA-GF VRRAWA-GF VRRAWA-GF AWRAPA-GF AWRAPA-GF AWRAPA-GF AWRAPA-GF AWRAPA-GF	DEVELHNAHG DFIEIHNAHG DFIEIHNAHG DFIEIHNAHG DFIEIHNAHG DAVEIHGAHG DAVEIHAHG DIIEIHGAHG DVIEIHAHG DTIDFHFAHG DTUPHFAHG DTVELHSHHG	YLLSFLSP- YLIMSFLSP- YLIMSFLSP- YLIMSFLSP- YLIMSFLSP- CLIMGFLSP- YLISFLSP- YLIFEFLSP- YLIMSFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP- YLMGFLSP-	-AANNTOOY -AVNTRTDEY -V'NKRTOAY -SINKRTDEY -ISNKRTDEY -ISNKRTDEY -ISNKRTDEY -ISNKRTDEY -K'NKRADGEY -K'NKRAGGEY -K'NKRAGGEY -VSNQRTOEY -VSNQRTOEY -VSNQRTOEY -VSNQRTOEY -RATPGETST -INNRRDEY -ANNKRTDKY -ANNKRTDKY -ANNKRTDKY	G-GSFENRIR G-GSFENRIR G-GSFENRTR	LSLEIAQUFR LSLEIAKITR IVREVAAAIR LSLEIAQVTR FLKEVIDSVK FLLQIIENIK VURSIISAVR IVOSIIKEUR VULDIIKAVR FPMEVVHSVR VVLEILOLIR IVTESRR PCP LLIELIVTAVR LALBIVEARR LALBIVEARR FLLMVARRIR	DAVGEHVE DAVGEHVE AVIPEGHP DAVGPNYF SYIPEDHP ROVTEAVGEE AVIPEEM KAIPDSMP AAIPETTP AAMPSMP AVIPEDHP AVIPEDHP QKT QKT AVIPEDHP		ISAS-DWCE- VSAT-DWLE- VSAT-DWLE- VSAT-DWLE- VSAT-EWLE- VSAT-EWNE- LISAS-EWNE- LISAS-EWNE- VSAT-EWNE- VTAT-DWLE- VSAT-DWFEF VSAT-DWFEF VSAT-DWFEF USAT-DWFF USAT-DW	
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SEO 6 SEO 10 SEO 10 SEO 12 SEO 12 SEO 14 SEO 16 SEO 19 SEO 22 SEO 27 SEO 30 SEO 30 SEO 30 SEO 35 SEO 36 SEO 42 SEO 44 SEO 44 SEO 44 SEO 44 SEO 47 SEO 40 SEO 47 SEO 40 SEO 47 SEO 40 SEO 47 SEO	TKRATAA-GA VKRAVKA-GA ARLAVQA-GV CKRATAA-GA ARRAVEIGGP AWRAVEISKF AQRALKA-GF AKRATA-GF AKRATA-GF KRATA-GF KRATA-GF KRATA-GF KRATA-GF KRATA-GF KRATA-GF AKRAYA-GF ARRAYA-GF ARRAY	DEVEINANG DEVEINANG DFIEINANG DFIEINANG DFIEINANG DFIEINANG DFIEINANG DAVEIRGANG DAIEIRANG DIEIRANG DVIEIRANG DEVELHANG DEWELHFANG DEVELHFANG	YLLSSFLSP- YLLMSFLSP- YLLMSFLSP- YLLSFLSP- YLLSFLSP- YLLSFLSP- YLLSFLSP- YLLSFLSP- YLLTEFLSP- YLLTEFLSP- YLLMGFLSP- YLLMGFLSP- YLLMGFLSP- YLLMGFLSP- YLLMGFLSP- YLLMGFLSP- YLMGFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP- YLMGSFLSP-	-AANNTDOY -AANNTDOY -AVNTRTDEY -VTWKRTDAY -SSMYRTDEY -ISNKRTDEY -ISNKRTDEY -ISNKRTDEY -ISNKRTDKY -TINKRADOY -CENKRTDKY -VSNQRTDEY -VSNQRTDEY -VSNQRTDEY -RAPPGFTST -ITMRRDSY -TTMQRTDEY -TT	G-GSFENRIR G-GSFENRIR G-GSFENRIR G-GSFENRTR G-GSFENRTR G-GSFENRTR G-GSFENRTR G-GSFENRTR G-GSFENRTR G-GSFENRTR G-GSFENRTR G-GSFENRIR	LSLEIAGUTR LSLEIAKUTR LVREVARAIR LSLEIAGVER FLKEVIDSVK FLLQIIENV VIREIISAVR VVLEILGIIRAVR FPMEVVHSVR VVLEILGLIR VVLEILGLIR LIELVTAVR LILELVTAVR LLLELVTAVR FLLETLANVR FLLETLANVR	DAVGHVE ENVEKDHP AVI PEGMP AVI PEGMP SSI ENDVP SSI ENDVP SSI ENDVP AVI PEEM KAI PDSMP AAI PETTP AAI PETTP AAI PETTP CH7 AAI PETTP EVWPENLP EVWPENLP EVWPENLP		ISAS-DWCE- VSAT-DWLE- ISAT-EWLE- VSAT-DW- ISAT-EWE- ISAT-EWE- VSAT-DWG- VSAT-DWG- VSAT-DWG- VSAT-DWG- VSAT-DWE- LISAT-EWE- VSAT-DWE- LISST-EWME- LISST-EWME- LISST-EWME- LISST-EWME- VSAT-DWLE- VSAT-D	ETLPEQEVLPEQEVLPEQEVLPEQEVLPEQEVLPEQEVLPEQ
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SEQ 10	SWKLSDSVR-	FAEALAAO	GAIDLIDVSS	GGVHAAQ	KI	KSGPALQAPE	HVALKKAVGD	KTTAMIA	GITI	
SEQ 12	AWTTEDSKK-	-LADILVE	KGIALVDVSS	GGNDYRQ₽₽→	RSGISK	ELREPIHVEL	SRAIKQHVGD	KLLVSCV	GGLE	
SEQ 14	AWSTEDALK-	-LADLVID	LGVKVIDVTS	GGNVAHCKS-	RYLLND	DKQLPSQVPL	ARKLKSHIRN	RCLIACS	GGLD	PTAKEMIOEK
SEQ 16 SEO 19	SWDLQQTI	ELAKILPD	LGVDLLDVSS WGIDFVEVSG	GGNNKDQ	CDKDERSEDA	MADENEFLEF	AKTIRTK	-FPKT.PT.MVT	GGFR	BIAKET VEK
SEQ 22	SWDLEOSTO-	-1.AK1.1.PD	LEVDLLDVSS	GGNSVAO	KI	ELTERYYQIDL	AAKIREAVGD	RLLIGAV	GNIN	
SEQ 24	GWEIEDTVAF	TLAARLRD	GGVDLIDVSS	GGNHKDQ	RI	EVKDCYQVPF	AEKIKDQVNG	ILLGAV	GMTR	
SEQ 27										
SEQ 30		0110111	HGVDLVDVSS	CCTUDYS		Kacarronni.	PROVERBACE	EVIVEDV	GGTK	
SEQ 33 SEQ 35	SWTVEQTC	QLARILEK	HGVDLVDVSS	GGIRPKS	ALA1	NaGEATQVDD	7007777700	5717577	9927	
SEQ 38									~	
SEQ 40										
SEQ 42	SWDVESTIK-	-ISKILAD	LGVDLLDVss	GGNHPQQ	KI	NMENT			~~~	
SEQ 44 SEO 83	FKP-EEAVQ-	LCEALEAAGM	DFVETSG RGVDVLDVSS	GTYESTG	KV	AAGPGYOAPL	AKAIKKSVGD	KMLISTV	GSIK	
SEQ 85	SWTWDOTVE-	LAKMLOE	ARVDLLDVSS	GGLVPFQ	KI	TVGAGYQLFG	AKAVRDALAK	IEPDASKR	MLVGA	
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OYE family										
A£4875	ELVPOFEY	LTAOM	RRLDVAYLHL	ANSRWL	DE	EKPHPDPNHE	VFVRVWG-Q-	ss-pilla	GGYD	
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SCOYEZ	ETGTVDOYDY	VLGELERRAK	AGKRLAFVHL	VEPRVTNP	FLTEGE	GEYNGGSNKE	AYSIWKG	PIIRA	GNFA	
SCOYE3	PROTERRY	VIGELEKRAK	AGKRLAFVHI.	VE PRVTDP	SLVEGE	GEYSEGTNDF	AYSIWKG	PIIRA	GNYA	
A36990	EEIHSY	ILQQLQQRAD	NGQQLAYISL	VEPRVTG	IYDVSL	KDQQGRSNEF	AYKIWKG	NFIRA	GNYT	
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SEQ 3	NGYOBN	OTLEROD			IDVALVG	RGFOKDPGLA	WTFAOHLGV-		1 EISMAN	1 *** QIRWGFTRRG
SEQ 6	NGKQAN	QILEEQD LLEKDG			IDVALVG	RGFQKDPGLA RGFQKNPGLV BOELBEPEWV	WTFAQHLGV- WAWADELNV-			1 %** QIRWGFTRRG QIRWGFSRRG OFGRA1
	NGKQAN	QILEEQD LLEKDG LSGPEPK			IDVALVGADAILIA	RGFQKDPGLA RGFQKNPGLV RQFLREPEWV RGFOKDPGLA	WTFAQHLGV- WAWADELNV- FSTARKLGV- WTFAOHLDV-		1EISMANEISMANEYTVPV	QIRWGFTRRG QIRWGFSRRG QFGRA1 QIRWGFTRRG
SEQ 6 SEQ 8 SEQ 10 SEQ 12	NGKQANSAHLANS ADEATAAEAMNGKQAN	QILEEQD LLEKDG LSGPEPK KLLEEG			IDVALVGLDLVLVGADATLIALDVALVG	RGFQKDPGLA RGFQKNPGLV RQFLREPEWV RGFQKDPGLA RGFLRNPGLV	WTFAQHLGV- WAWADELNV- FSTARKLGV- WTFAQHLDV- WEFADKLGV-		1EISMANEISMANEYTVPVEIAMAS	QIRWGFTRRG QIRWGFSRRG QFGRAI QIRWGFTRRG QLGWGFWPNK
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14	NGKQAN SAHLANS ADEATAAEAM NGKQAN KDPELLN	QILEEQD LLEKDG LSGPEPK KLLEEEGT			IDVALVGLDIVLVGADATLIALDVALVGFDLALIG	RGFQKDPGLA RGFQKNPGLV RQFLREPEWV RGFLRNPGLV KGFLKNFGLI	WTFAQHLGV- WAWADELNV- FSTARKLGV- WTFAQHLDV- WEFADKLGV- SRIADOLOR-			QIRWGFTRRG QIRWGFSRRG QFGRAI QIRWGFTRRG QLGWGFWPNK QVKNALS
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16	NGKQAN SAHLANS ADEATAAEAM NGKQAN KDPELLN	QILEEQD LLEKDG LSGPEPK KLLEEEGT			IDVALVGLDIVLVGADATLIALDVALVGFDLALIG	RGFQKDPGLA RGFQKNPGLV RQFLREPEWV RGFLRNPGLV KGFLKNFGLI	WTFAQHLGV- WAWADELNV- FSTARKLGV- WTFAQHLDV- WEFADKLGV- SRIADOLOR-			QIRWGFTRRG QIRWGFSRRG QFGRAI QIRWGFTRRG QLGWGFWPNK QVKNALS
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19		QILEEQD LLEKDG LSGPEPK KLLEEGG KYLEEGT EFIANGD ENGAKTR AALESDO				RGFQKDPGLA RGFQKNPGLV RQFLREPEWV RGFQKDPGLA RGFLRNFGLV KGFLKNTGLI RQFLKEPEFV RPAI INPSLP	WTFAQHLGV- WAWADELNV- FSTARKLGV- WTFAQHLDV- WEFADKLGV- SRIADQLQA- LTVADELGV- ANLILNPEV-			1 **** QIRWGFTRRG QIRWGESRRG QEGRAI — QIRWGETRRG QLGWGEWPNK QYKLALS — QYLRGPLSR LFDKKAREPH
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16		QILEEQD LLEKDG LSGPEPK KLLEEGG KYLEEGT EFIANGD ENGAKTR AALESDO				RGFQKDPGLA RGFQKNPGLV RQFLREPEWV RGFQKDPGLA RGFLRNFGLV KGFLKNTGLI RQFLKEPEFV RPAI INPSLP	WTFAQHLGV- WAWADELNV- FSTARKLGV- WTFAQHLDV- WEFADKLGV- SRIADQLQA- LTVADELGV- ANLILNPEV-			1 **** QIRWGFTRRG QIRWGESRRG QEGRAI — QIRWGETRRG QLGWGEWPNK QYKLALS — QYLRGPLSR LFDKKAREPH
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27		QILEEQD LLEKDG LSGPEPK KLLEEGG KYLEEGT EFIANGD ENGAKTR AALESDO				RGFQKDPGLA RGFQKNPGLV RQFLREPEWV RGFQKDPGLA RGFLRNFGLV KGFLKNTGLI RQFLKEPEFV RPAI INPSLP	WTFAQHLGV- WAWADELNV- FSTARKLGV- WTFAQHLDV- WEFADKLGV- SRIADQLQA- LTVADELGV- ANLILNPEV-			1 **** QIRWGFTRRG QIRWGESRRG QEGRAI — QIRWGETRRG QLGWGEWPNK QYKLALS — QYLRGPLSR LFDKKAREPH
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 30	NGKQANSAHLANS ADEATAAEAMNGKQANKDPELLNRDIFKLD E-DGRVTIQRTRQGMETADIARDGLFTTAN	QILEEQD LEKDG LSGPEPK KYLEEGT EFIANGD ENGAKTR AALESDO DVVDEQGAEK EILESGK	VAEAKQTHDT	IEVVSESHGG	IDVALVGLDIVILVG	RGFQKDPGLA RGFQXNPGLW RQFLREPEWV RGFQKDPGLA RGFLRNPGLW KGFLKNTGLI RQFLKEPEFV RBAIINPSLP RQFLREPEFV REFLRNPSLV	WTFAQHLGV- WAWADELNV- FSTARKLGV- WTFAQHLDV- WEFADKLGV- SRIADQLQA- LTVADELGV- ANLILNPEV- LRTARNLGV- LDSANQLGE-			QIRWGFTRRG QIRWGFSRRG QFGRAI
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33	NGKQANSAHLANS ADEATAAEAMNGKQANKDPELINRDIFKLD E-DGRVTIQRTAQGMETADIARDGLFTTAN	QILEEQD LLEKDG LLSKPBFK KLLEEGG KYLEEGT ENGAKTR ENGAKTR DWUDEQGAEK EILESGK	TOHTOMASAV	LEVVSESHGG		RGFQKDPGIA RGFQKNPGIV RQFLREPEWY RGFCKDPGIA RGFLRNPGIV KGFLKNTGLI RQFLKEPEFY RPAIINPSLP RQFLREPEFY REFLRNPSLV	WTFAQHLOV- WAWADELNV- FSTARKLOV- WTFAQHLDV- WEFADKLGV- SRIADQLOQ- LIVADELGV- ANLILNPEV- LRTARNLOV- LDSANQLGE- RAFANELGV-			QIRWOFTRRG QIRWGFTRRG QIRWGFTRRG QIRWGFTRRG QUGWGEWPMK QYKLALS QYLRGPLSSR LFDKKRAEPH QYHRAVWKGR
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 22 SEQ 27 SEQ 30 SEQ 33 SEQ 33	NGKQANSAILANS ADEATAAEAMNGKQANKOPELINRDIFKLD E-DGRVTICMTRQGMETROGMETADIARDGLFTTANTGHLAE	QILEEQD LLEKDG LSGPEPK KLLEEEG EFIANGD ENGARTR DVVDEQGAEK EILESGK EVLOSG	VAEAKQTHOT	IEVVSESHGG	IDVALVGLDIVALVG	RGFQKDPGLA RGFCKNPGLJV RGFLKEPEWV RGFCKDPGLA RGFLKNTGLI RQFLKNTGLI RQFLKEPEFV RQFLREPEFV RGFLREPEFV REFLRNPSLV	WTFAQHLGV- WAWADELNV- FSTRAKLGV- WTFAQHLDV- WEFADKLGV- SRIADQLQA- LTVADELGV- LATARINLGV- LDSANQLGE- RAFANELGV-			QIRWGFTRRG QIRWGFTRRG QIRWGFTRRG QIRWGFTRRG QUGWGEWPNK QYKLALS QYLRGPLSSR LFDKKRABEH QYHRAVWRKG QYDYAVKGHR
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33	NGKQANSAHLANS ADEATAREAM -NGKQANKOPELLNRDIFKLDDGNVTIORTRQMETRQMETRAIAETGHLAE	QILEEQD LLEKDG LSGPEPK KLLEEEG EFIANGD ENGAKTR AALESDO EVLQSG EVLQSG	VAEAKQTHOT	IEVYSESHGG		RGFQKDPGLA RGFQKNPGLN RGFLREPEWV RGFQKDPGLA RGFLRNPGLV RGFLKEPEEV RQFLKEPEEV RQFLREPEEV REFLRNPSLV	WTFAOHLGU- WAWADELNU- FSTARKLGU- WTFAOHLDU- WEFADKLGU- SRIADQLGA- LTVADELGU- ANLILNPEU- LRTAHNLGU- LRTAHNLGU- RAFANELGU-			QIRWGFTRRG QIRWGFSRRG QIRWGFTRRG QLGWGFWFNK QYKLALS QYLAGPLSS LFDKKRAEPH QYHRAVWRKG QYDYAVKGHR
SEQ 6 SEQ 8 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 27 SEQ 30 SEQ 33 SEQ 35 SEQ 38 SEQ 40	NGKQANSAHLANS ADEATAAEAMNGKQANNGPELINRDIFKLD E-DGRVTIORTRQGMETRAIARDGLFTTANTGHLAE	QILEEQD LLEKNG LSGPEPK KLLEEEG EFIANGD ENGARTR DVVDEQGAEK EILESGK EVLQSG	VAEAKQTHOT	LEVVSESHGG	IDVALVGLDIVILVGLDIVILVGLDIVALVG	RGFQKDPGLA RGFQKNPGLJV RGFQKDPGLA RGFQKDPGLA RGFLKNTGLI RQFLKNTGLI RQFLKPEFV RQFLREPEFV RGFLREPEFV REFLRNPSLV	WTFAQHLGV- WAWADELNV- FSTRAKLGV- WTFAQHLDV- WEFADKLGV- SRIADQLQA- LTVADELGV- LTVADELGV- LATARINLGV- LDSANQLGE- RAFANELGV-			QIRWGFTRRG QIRWGFTRRG QIRWGFTRRG QIRWGFTRRG QUGWGFWPNK QYKLALS QYLRGPLSSR LFDKKRABEH QYHRAVWRKG QYDYAVKGIR
SEQ 6 SEQ 9 SEQ 10 SEQ 12 SEQ 12 SEQ 16 SEQ 19 SEQ 29 SEQ 27 SEQ 30 SEQ 33 SEQ 33 SEQ 35 SEQ 36 SEQ 40 SEQ 40 SEQ 42	NGKQANSAHLANS ADEATAAEAMNGKQANNGPELLNROIFKLDTROIFKLDTROIMETADIARDGLFTTANTGHLAE	QILEROD LIEKOG LSGPEPK KILERGG KILERGG EFINGD EFINGD ENGAKTR AALESDO DVVDEQGAEK EILERGK EVLQSG EVLQSG	TOPTOMASAV	IEVVSESHGG		RGFQKDPGLA RGFQKNPGLV ROFLREPEWV RGFQKDPGLA RGFLKNFGLI RGFLKEPEFV RPAIINSSLP RGFLREPEFV REFLRNPSLV RWFQQNPGLV	WTFAQHLGY- WTFAQHLDY- FSTARKLGY- WTFAQHLDY- WFFAQHLDY- WFFAQHLGY- RIADQLGY- RALLEY- RAFANELGY- RAFANELGY- KDIIAGKYSS SUSUADAL NIT-	IIKYAMGEDE		1- CIRMOFTRAG GIRMOFTRAG GIRMOFTRAG GPGRAL- GIRMOFTRAG GYKLALS- GYLAGPLISAR LFDKKAZER GYDYAVKGIR GIRMAKGEE GIRMAKGEE GIRMAKGEE
SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 14 SEQ 15 SEQ 21 SEQ 22 SEQ 27 SEQ 27 SEQ 30 SEQ 33 SEQ 33 SEQ 33 SEQ 38 SEQ 42 SEQ 44 SEQ 42 SEQ 44	NGKQANSAHLANS ADEATAREAMNGKQANNGKQANNGKQNGKQTADIARTADIARTGHLAETGHLAE	QILEDOP	VAEAKOTHOT	IEVVSESHGG		RGFQKDPGLA RGFQKDPGLA RGFLKPEBWV RGFLKPEBWV RGFLKPGLA KGFLKNTGLI RGFLKEPEFV RPAIIN9SLP RGFLREPEFV REFLRNPSLV RWFQQNRGLV RAAGGEPDLA RAAGGEPDLA RAAGGEPDLA RAAGGEPDLA RAAGGEPDLA	WTFAQHLGY- WAWADELNY- ESTARKLGY- WTFAQHLDV- WEFAQKLGY- SRIADDLGO- LTVADELGY- ANLILNPEV- LRTAINLGY- LDSANQLGE- RAFANELGY- KDIIAGKVSS WSWADDLNT-	IIKYAMGEDE		1
SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 22 SEQ 24 SEQ 33 SEQ 33 SEQ 35 SEQ 36 SEQ 42 SEQ 44 SEQ 68 SEQ 83	NGKQANSAHLANS ADEATAAEAMNGKQANNGKQANKOTEKLOROTEKLOTROGMETADIARDGLFTTANTGHLAECGMUDAGTTASCGMEG	QILEEQD LIEKOG LSGPEPK KYLEEGG KYLEEGT EFIANGD ENGAKTR AALESDD DVVDEQGAEK EILESGK EVLOSG LQGVDG EILAGGG- SYDSPNG	TURTOMASAV	IEVYSESHGG		RGFQKDPGLA RGFQKNPGLV ROFLREPEW RGFLKNPGLV RGFLKNPGLV KGFLKNTGLI RGFLKEPEFV RPALINSSLF RGFLREPEFV REFLRNPSLV RWFQQNRGLV RWFQQNRGLV RAGGSEPDLA RAGGSEPDLA RLFQKNTGLV KLAEQSIQSG	WTFAQHLGY- WTFAQHLDY- FSTARKLGY- WTFAQHLDY- WEFADKLGY- SRIADQLQA- INTUNEV- LITVADELLCY- LITVADELLCY- LITVADELCY- LITVADELCY- RAFANELGY- KDILAGKYSS KDILAGKYSS KDILAGKYSS	TIKYAMGEDE GLMSYFS		1- CIRMOFTRAG CIRMOFTRAG CIRMOFSRAG OFGRAI- CIRMOFTRAG CIRMOFTRAG CYLROFLSSA LFDKKRAEPH CYHRAVWRKG CYDYAVWGHR CIDWSFKGRG CIRMAKGEE CIAMOFGGRA GTRAAGNPQY
SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 14 SEQ 15 SEQ 21 SEQ 22 SEQ 27 SEQ 27 SEQ 30 SEQ 33 SEQ 33 SEQ 33 SEQ 38 SEQ 42 SEQ 44 SEQ 42 SEQ 44	NGKQANSAHLANS ADEATAAEAMNGKQANNGKQANKOTEKLOROTEKLOTROGMETADIARDGLFTTANTGHLAECGMUDAGTTASCGMEG	QILEEQD LIEKOG LSGPEPK KYLEEGG KYLEEGT EFIANGD ENGAKTR AALESDD DVVDEQGAEK EILESGK EVLOSG LQGVDG EILAGGG- SYDSPNG	TURTOMASAV	IEVYSESHGG		RGFQKDPGLA RGFQKNPGLV ROFLREPEW RGFLKNPGLV RGFLKNPGLV KGFLKNTGLI RGFLKEPEFV RPALINSSLF RGFLREPEFV REFLRNPSLV RWFQQNRGLV RWFQQNRGLV RAGGSEPDLA RAGGSEPDLA RLFQKNTGLV KLAEQSIQSG	WTFAQHLGY- WTFAQHLDY- FSTARKLGY- WTFAQHLDY- WEFADKLGY- SRIADQLQA- INTUNEV- LITVADELLCY- LITVADELLCY- LITVADELCY- LITVADELCY- RAFANELGY- KDILAGKYSS KDILAGKYSS KDILAGKYSS	TIKYAMGEDE GLMSYFS		1- CIRMOFTRAG CIRMOFTRAG CIRMOFSRAG OFGRAI- CIRMOFTRAG CIRMOFTRAG CYLROFLSSA LFDKKRAEPH CYHRAVWRKG CYDYAVWGHR CIDWSFKGRG CIRMAKGEE CIAMOFGGRA GTRAAGNPQY
SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 14 SEQ 15 SEQ 27 SEQ 27 SEQ 27 SEQ 23 SEQ 33 SEQ 33 SEQ 35 SEQ 38 SEQ 38 SEQ 42 SEQ 44 SEQ 45 SEQ 46 SEQ 47 SEQ 48 SEQ 48 SEQ 41 SEQ	NGKQANSAHLANS ADEATAREAMNGKQANKOPELLNKOPELLNKOPELLNTROISKEDTR	QILEEQD- LLEKDG- LSGPPK- KLLEEGG- KYLEEGT- EFIANGD- ENGAKTR- AALESDD- DVVDEQGAEK EILESGK EVLOSG EV	VAEANOTRUT	IEVVSESHGG		RGFQKDPGLA RGFQKDPGLA RGFCKDPGLA RGFLKDFGLA RGFLKNTGLLI RGFLKNTGLI RGFLKEBET RDFLKNTGLI REFLKNTSLI REFLKNTSLI REFLKNTSLI REFLKNTSLI RAFQQNRGLI RAFQQNRGLI RAFQQNRGLI RAFQGNTGLA KLAEQSIQSG	WTFAQHLGY- WAWADELNY- FSTARKLGY- WTFAQHLDY- WFFADKLGY- SRIADQLQA- RALTUNEEY- LOTANQLGE- LOTANQLGE- RAFANELGY- KDIIAGKYSS WSWADDINT- ECDAYLLAR- YFAAKELGY- WARAELGY-	IIKYAMGEDE		1
SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 24 SEQ 27 SEQ 30 SEQ 33 SEQ 33 SEQ 35 SEQ 36 SEQ 42 SEQ 44 SEQ 83 SEQ	NGKQ-ANSAHLANS ADEATAREAMNGKQ-ANSAHLANS ADEATAREAMNGELKINROIFIKINROIFIKINTOGHITORTADIARDGLETTANTGHLAEVGAMUDAIGTLAEVGAMEGPGLAE	QILEBOD— LLEKNG— LLEKNG— LLSEPPK— KLLEEEG— KYLEEGT— ENGAKTR— AALESIO— DVVDEQGREK EILESGK— EVLQSG— LQGVDG— EILAGG— SYDSPNG— AALGANQ— KILANGS—	VAEAKOTHOT	IEVVSESHGG IEVVSESHG IEVVSESHG IEVVSESHGG IEVVSESHGG IEVVSESHG IEVVSESHG IEVVSESHGG IEVVSESHG IEVV		RGFQKDPGLA RGFQKNPGLV RQFLREPEW RGFCKNPGLV RGFLKEPELV RGFLKEPELV RQFLKEPELV RQFLKEPELV RGFLREPELV REFLRNPSLV RAGGEPDLA RLFQKNFGLV RLAGGEPDLA RLFQKNFGLV RAHLDPHMA RELLRNPSWA	WTFAQHLGY- WAWADELNY- FSTARKLGY- WTFAQHLDY- WEFADKLGY- SRIADUGG- LTVADELGY- PARAELGY- PARAELGY- CHARAELGY- CHA	TIKYAMGEDE		1
SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 14 SEQ 16 SEQ 27 SEQ 27 SEQ 27 SEQ 23 SEQ 23 SEQ 33 SEQ 33 SEQ 35 SEQ 38 SEQ 38 SEQ 42 SEQ 44 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 84 SEQ 84 SEQ 84 SEQ 84 SEQ 84 SEQ 84 SEQ 85 SEQ 86 SEQ 87 SEQ 88 SEQ	NGKQ-ANSAHLANS ADEATAREAMNGKQ-ANSAHLANS ADEATAREAMNGKG-ANNGKG-ANNGKG-ANNGKG-ANTGHL-ARTGHL-ARTGHL-ARVGRM-UDAIGTL-ARVGRM-EGPGLAE	QILESOD— LLEKNG— LLSEPPK— KLLEEGG— KYLEEGT— EVLOSG— EVLOSG— EVLOSG— EVLOSG— LOGVDG— EILASGK— EVLOSG— ALLCANQ— KILANGS— ALLCANQ— KILANGS— ALLCANQ— KILANGS— AILCANGS— SILANGG—	VAEAKOTHOT	IEVVSESHGG		RGFQKDPGLA RGFQKNPGLV RQFLREPEWA RGFCKNPGLV RGFCKNPGLV RGFLKEPEFV RQFLKEPEFV RQFLREPEFV REFLRNPSLV RWFQQNRGLV RAAGSEPDLA RLFQKNTGLV KLAEQSLOR RAHLDPHMA RELLRNPSWA RPHLADPAWT	WTFAQHLGY- WAWADELNY- FSTARKLGY- WTFAQHLDY- WEFADKLGY- SRIADQLGY- LTVADELGY- LTVADELGY- LATAINLGY- LDSANQLGE- LDSANQLGE- KDITAGKVSS WSWADDLNT- ECDAVLLNT- ECDAVLLNT- YFAAKELGY- QHAARELGY- LHEAAKIGF-	TIKYAMGEDE:		QIRMOFTERG QIRMOFTERG QIRMOFTERG QIRMOFTERG QIRMOFTERG QYMLALS QYLLAS QYLLAS QYLLAS QYDYAVKGIR QIDWSFKGRG QIDWSFKGRG QIRMAKGE QIAWOFGGRA GTRAAGNPQY LPAPYAHWLE QYGMGM— QYARAGW KQYRSARGQY
SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 14 SEQ 19 SEQ 27 SEQ 27 SEQ 30 SEQ 31 SEQ 33 SEQ 33 SEQ 38 SEQ 42 SEQ 44 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 84 SEQ 84 SEQ 84 SEQ 85 SEQ 42 SEQ 44 SEQ 83 SEQ 42 SEQ 44 SEQ 83 SEQ 45 SEQ 44 SEQ 83 SEQ 45 SEQ 44 SEQ 83 SEQ 45 SEQ 44 SEQ 83 SEQ 84 SEQ 84 SEQ 85 SEQ 84 SEQ 85 SEQ 84 SEQ 85 SEQ	NGKQANSAHLANS ADEATAREAMNGKQANSAHLANS ADEATAREAMNGKQKDIFKLDDGNVTIQRTRQIARDGLFTTANTGHLAEVGAMVDAGTLAEVGMMEGPGLAEEPGQAETGAQAETGAQAE	QILEEOD- LISEPPK- LISEPPK- KILEEEG- KYLEEGT- EFIANGD- ENGAKTR- AALESDO- DVVDEQGAEK EILEEGK- EVLOSG- EVLOSG- EVLOSG- EVLOSG- EVLOSG- EVLOSG- EVLOSG- ALGAMQ- ALGAMQ- ALGAMQ- ALIQAGD- SIIAAGR- SIIAAGR-	VAEAKQTRUT	IEVVSESHGG		RGFQKDPGLA RGFQKNPGLW RGFLKNPGLW RGFLKNPGLW RGFLKNPGLW RGFLKEPEFV RPALINSSLP RWFQGRRGEFF RWFQQNRGLW RAAGSEPDLA RLFGKMTGLW KLARDSHUS RAHDSHUS ROHDSHUS ROHDSH	WTFAQHLGY- WTFAQHLDY- FSTARKLGY- WTFAQHLDV- WFFAQHLDV- WFFAQKLGY- SRIADGLGV- ANLILNESV- LOSANQLGE- LOSANQLGE- KDIIAGKYSS WSWADDLMT- ECDAVILAR- YFARKELGY- GRARAELGY- GRARAELGY- GRARAELGY- ENWAGIOL- PBWAGIOL- PBWAGIOL-	IIKYAMGEDE —GIMSYES		1- CIRMOFTRIG CIRMOFTRIG CIRMOFTRIG CIRMOFTRIG CIRMOFTRIG CIRMOFTRIG CIRMOFTRIG CIRMOFTRIG CIRMOFTRIG CYLLALS CYLLALS CYLLALS CYLLALS CYLLALS CYLLALS CYLLALS CIRMAKGEE CIRMAKGEE CIRMAKGEE CIRMOFGGGA CIRMAKGEE CIRMOFGGGA CIRMAKGEE CIRMAK
SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 14 SEQ 16 SEQ 27 SEQ 27 SEQ 27 SEQ 23 SEQ 23 SEQ 33 SEQ 33 SEQ 35 SEQ 38 SEQ 38 SEQ 42 SEQ 44 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 84 SEQ 84 SEQ 84 SEQ 84 SEQ 84 SEQ 84 SEQ 85 SEQ 86 SEQ 87 SEQ 88 SEQ	NGKQ-ANSAHLANS ADEATAREAMNGKQ-ANSAHLANS ADEATAREAMNGKG-ANNGELINBIFLINBIFLINTGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-ARUGHL-AR	QILEBOD— LISEPPH LISERS LISERS KYLEEGT KYLEEGT ENGAKTR AALESIOD DVVDEQGREK EILESGK LQGVDG EILAGG SYDSPNG ALLQRO KILNNGS ALLQR	VAEAKOTHOT	IEVVSESHGGED		RGFQKDPGLA RGFQKNPGLV RGFCKNPGLV RGFCKNPGLV RGFCKNPGLV RGFLKEPEV ROFLREPEV RGFLKEPEV RGFLKEPEV REFLENPSLV RAGGEPDLA RLFQKNTGLV RLAGGEPDLA RLFQKNTGLV RLAGGEPDLA RLFQKNTGLV RLAGGEPDLA RELLENPSWA RELLENPSWA RPLLADPAWT RYFLSTPDLD	WTFAQHLGY- WAWADELNY- STARKLGY- WTFAQHLDY- WEFADKLGY- SRIADULGY- LTVADELGY- LATVADELGY- LATVADELGY- LATVANICE-	TIKYAMGEDEGIMSYPS		QIRMOFTREG QIRMOFTREG QIRMOFTREG QIGMOFWPHE QYHALAS QYLAGPLSSE QYLAGPLSSE QYLAGPLSSE QYDYAVKGIR QIOWSFKGGG QIDWSFKGGG QIRMAKGEE QIAWOFGGRA GTRAAGNPQY LPAPYAHWLE QYGNGM CYARAGW KQYRSARGQY SFYSTLSRGG
SEQ 6 SEQ 10 SEQ 12 SEQ 14 SEQ 16 SEQ 19 SEQ 27 SEQ 27 SEQ 27 SEQ 30 SEQ 33 SEQ 33 SEQ 35 SEQ 38 SEQ 42 SEQ 44 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 42 SEQ 44 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 84 SEQ 84 SEQ 85 SEQ 44 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 83 SEQ 84 SEQ 84 SEQ 85 SEQ 84 SEQ 85 SEQ	NGKQANSAHLANS ADEATAREAMNGKQANSAHLANS ADEATAREAMNGKQKDIFKLDDGNVTIQRTAQIFKETAQIFKETGHLAEVGAMVDAGTLAEVGAMEGVGAMEGFGAQAETGAQAETGAQAEABHAN AASARKYTEQ	QILEBOD— LISEPPK LLEREG LISEPPK KLLEBEG KYLEBGT EFIANGD ENGARTR AALESDO— DVVDEQGAEK EILESGK— EVLOSG—— LOGVDG— EILAGG SYDSFNG AALGAMQ— AILQAGD SIIAAGR AILQAGD SIIAAGR MAARTYT— GVLEEGG	VAEAKQTRUT	IEVVSESHGG		RGFQKDPGLA RGFQKDPGLA RGFQKDPGLA RGFQKDPGLA RGFQKDPGLA RGFLKDPGLA RGFLKDPGLA RGFLKDPGLA RGFLKDPGLA RAFILNSLIP RWFQQNRGLV RAAGSEPDLA RLFQKMTGLA KLAADPHMA RPFLKDPHAA RYFLSTPDLA RYFTSNPDLA	WTFAQHLGY- WAWADELNY- FSTARKLGY- WTFAQHLDV- WFFADKLGY- RAFANCLGY- ANLILNEV- LDSANQLGE- RAFANCLGY- KDIIAGKYSS WSWADDLNT- ECDAVILAR- YFAAKELGY- GHARRELGY- GRARRELGY- GRARRELGY- FRAVAGICL- ERLERGIP- EVELKEGIP-	IIKYAMGEDEGIMSYES		QIRMGFTRIG QIRMGFTRIG QIRMGFSRIG OFGRAI— QIRMGFTRIG QIGMGEWPHK QYKLALS- QYLRAS- QYDHAVWRKG QYDYAVKGIR QIONSFKGRG QIRMAKGEE QIAMGFGGRA GIRMAKGEE QIAMGFGGRA GTRAAGNPQY LPAPYAHWLE QYGNGM— QYARAGW KQYRSARGQY SFYSTLSREG RFYGFEDNA
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SEQ 16	PKKLTTVP			
SEO 19	WIVEKLGMKS	IVGAGVEVTW	YVSELKKLAK	F
SEQ 22	ART			
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SEO 33	KKVNKSSL			
SEO 35				
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SEQ 83	KKMAPKIVI			
SEQ 85	HRVHVAKK			
Bacteria				
T44612	RYR			
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NP 295913				
AF320254	ETNLORAAAA	VAGK		
OYE family				
A£4875	YLDYPESAEY	MALHNEPV		
A£4961	KCYVDYPPAT	ASS		
Ca2460	YNSYDESEKO	VIGKPLV		
NC4452	YIDOPESKEE	EKVYGAQA		
SCOYE1	YIDYPTYEEA	T.KT.GWDKK		
SCOYE2	YIDYPTYEEA	LKLGWDKN		
SCOYE3	YTDYPTYEEA	VDLGWNKN		
A36990	YNSYDESEKQ	VIGKPLA		

Figure 1. A multiple alignment of the 2031 OR amino acid sequence from A. fumigatus (SEQ ID No3) along with related 2031 ORs from other fungi and bacteria (see Example 4) and OYEs. Regions 1-11, marked with * or #, refer to amino acids conserved between ORs but not OYEs.

Fungal 2031 ORs are given by the following SEQ ID No.: A. fumigatus, SEQ ID Nos. 3, 6 and 8; A. nidulans, SEQ ID No. 10; C. albicans SEQ ID Nos. 12 and 14; N. crassa, SEQ ID Nos. 16 and 19; M. grisea SEQ ID Nos. 22 and 44; S. pombe SEQ ID No. 24 (NP_595868); C. trifolii SEQ ID No. 27; F. sporotrichioides SEQ ID Nos. 30, 33 and 35; F. graminearum SEQ ID Nos. 38 and 83; M. graminicola SEQ ID Nos. 40 and 42; U. maydis SEQ ID No 85.

Bacterial ORs resembling 2031 are: T44612 (Pseudomonas putida), SEQ ID No. 86; NP_625402 (Streptomyces coelicolor), SEQ ID No. 87; NP_295913 (Deinococcus radiodurans), SEQ ID No. 88; AF320254 (Azoarcus evansii, SEQ ID No. 89.

Fungal ORs similar to the Old Yellow Enzyme family (originally identified in S. cerevisiae):

A. fumigatus, Af4875 and Af4961, SEQ ID Nos. 90 and 91 respectively; C. albicans, Ca2460 and A36990, SEQ ID Nos. 92 and 93 respectively; N. crassa, Nc4452, SEQ ID No. 94; S. cerevisiae, OYE1, OYE2 and OYE3, SEQ ID Nos. 95-97 respectively.

Details of the sequence searches that identified the ORs other than SEQ ID No. 3, and methods for the construction of multiple alignments are given in Example 4 hereinafter.

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SEQ 7 SEQ 9	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC TCCTATGCGA	CCCCGTCAG-	TGGAACAGCC	GCTTACAGGG	AATGATAATG	CTCGCCTCGC AGTAGCTATCGTGTCCTCGC	GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCCATGTGC GCCGCTCTGC TCCAATGTGT
SEQ 7 SEQ 9 SEQ 11	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC TCCTATGCGA	CCCCGTCAG- GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG	CTCGCCTATCCTATCCTATCGTGTCGTATC	GCCCCTCTGC GCCCCTCTGC GCCACTCTGC GCCACTCTGC GCCCATGTGC GCCGCTCTGC TCCAATGTGT ACCAATGTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC TCCTATGCGA	CCCCGTCAG- GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG	CTCGCCTCGC AGTAGCTATCCTATCCTCGCGTATC	GCCCTCTGC GCCCCTCTGC GCCACTCTGC GCCACTCTGC GCCCATGTGC TCCAATGTGT ACCAATGTGC GCCCATGTGC
SEQ 7 SEQ 9 SEQ 11	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC TCCTATGCGA	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG	CTCGCCTCGC AGTAGCTATCGTGTCGTATCGTATCGTATCGTATCGTATC	GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTCTGC GCCGATGTGC GCCGCTCTGC TCCAATGTGT ACCAATGTGC GCCCATGTGC GCCATGTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC TCCTATGCGA	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG	CTCGCCTCGC AGTAGCTATCCTATCCTCGCGTATCGTATCGTATCGTATC	GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTCTGC GCCATGTGC GCCGCTCTGC GCCATGTGC ACCAATGTGC ACCAATGTGC GCCATGTGC GCCATGTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 18 SEQ 20	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC TCCTATGCGA	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG	CTCGCCTCGC AGTAGCTATCGTGTCGTATCGTTTCGTTTCAAAGCAAAGCAAAGC	GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTCTGC GCCATGTGC GCCATGTGC TCCAATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 18 SEQ 20 SEQ 21	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC TCCTATGCGA	GCCCTTGCAT	TGGAACAGCC	GCTTACAGG	AATGATAATG	CTCGCCTCGC AGTAGCTATCCTATCCTCGCGTATCGTATCGTTTCAAAGCAAAGCGTCTC	GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTCTGC GCCATGTGC TCCAATGTGT ACCAATGTGT GCCATGTGC GCCATGGCC GCCATGGCC GCCATGTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 18 SEQ 20 SEQ 21 SEQ 23	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG	CTGGCCTGGC AGTAGCTATCGTGTCGTGTCGTTTCAAGCAAGCGTCCGTCCGTCC	GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCATGTGC TCCAATGTGT ACCAATGTGT ACCAATGTGC GCCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 18 SEQ 20 SEQ 21 SEQ 23 SEQ 23 SEQ 25	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCCCTCTGC GCCACTCTGC GCCACTGTGC GCGCTCTGC TCCAATGTGT ACCAATGTGC GCCCATGGCC GCCATGGCC GCCATGGCC GCCATGTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 18 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 25	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	CCCCGTCAG	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTGTGC CCCATGTGT ACCAATGTGT ACCAATGTGC CGCCATGGCC CGCCATGGCC CGCCATGTGC CGCCATGTGC CGCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTCC CCCATGTCC CCCCATGTCC CCCCATGTCC CCCCATGTCC CCCCATGTCC CCCCTCTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 18 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 25 SEQ 28	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCATGTGC TCCAATGTGT ACCAATGTGC GCCCATGGCC GCCATGGCC GCCATGGCC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC CCCCATGTGC CCCCCTTCTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 17 SEQ 17 SEQ 20 SEQ 21 SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTCTGC GCCATGTGC TCCAATGTGT ACCAATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC CCCATGTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 29 SEQ 29 SEQ 29 SEQ 29	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	CCCCGTCAG	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCATGTGC TCCAATGTGT ACCAATGTGC GCCATGGCC GCCATGGCC GCCATGGCC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC CCCATGTGC CCCATGTC CCCAT
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 18 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 28 SEQ 29 SEQ 29 SEQ 32	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTGTGC GCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTTGC CCCATGTTGC CCCATGTTGC CCCATGTTGC CCCATGTTGC CCCTCTCTGT
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 20 SEQ 21 SEQ 25 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 34 SEQ 34	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	CCCCGTCAG-	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTCTGC GCCACTGTGC GCCATGTGC TCCAATGTGT ACCAATGTGT CGCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC CCCATGTGC CCCTCTCTGC CCCATGTGC CCCTCTCTGC CCCATGTGC CCCATGTGC CCCTCTCTGC CCCATGTGT
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 15 SEQ 20 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 25 SEQ 26 SEQ 29 SEQ 34 SEQ 34 SEQ 36 SEQ 37	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTGTGC GCCATGTGC TCCAATGTGT ACCAATGTGC GCCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC CCCATGTGC CCCTCTCTGC CCCTCTCTGC CCCTCTCTGT
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 20 SEQ 21 SEQ 25 SEQ 25 SEQ 26 SEQ 29 SEQ 32 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 39	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG	CTCGC CTCGC CTGCC CTTGC CTTGC	GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTCTGC GCCATGTGC TCCAATGTGT ACCAATGTGT ACCAATGTGC GCCATGTGC CCCATGTGC CCCTCTCTGC GGGGCTCTGC GGGGCTCTGC
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 16 SEQ 20 SEQ 21 SEQ 25 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 34 SEQ 34 SEQ 37 SEQ 39 SEQ 41 SEQ 43	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTCTGC GCCACTGTGC GCCATGTGC TCCAATGTGT ACCAATGTGT ACCAATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC GCCATGTGC CCCATGTGC CCCTCTCTGC CCCATGTGC CCCTCTCTGC CCCTCTCTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC GCCATGTCC GGGGCTCTGC GGGGCTCTGC GGCATGTCG
SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 20 SEQ 21 SEQ 25 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 37 SEQ 37 SEQ 39 SEQ 41	TGAGTGCAGT	TGCCCTTGCT	CATATCGACG	AAAGCTAATC	GCCCTTGCAT	TGGAACAGCC	GCTTACAGGG	AATGATAATG		GCCCTCTGC GCCCTCTGC GCCACTCTGC GCCACTCTGC GCCACTCTGC GCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTGC CCCATGTTGC CCCATGTTGC CCCATGTTGC CCCATGTTGC GCCATGTGT GCGGCTCTGC GCGATGTGT GCGGCTCTGC GCGATGTGG

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	603	611	621	631	641	651	661	671		691
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SEQ 1										
SEQ 2	CAATACTCCG	CC		-~-CAGGACG	GCCACATGAC	TCCC	TECCATATEG	CACATCTTGG	AGGGATTGCC	CAGCGAGGGC
SEQ 4										
SEQ 5										
SEQ 7										
SEQ 9										
SEQ 11 SEQ 13										
SEQ 15										
SEQ 17										
SEQ 18										
SEQ 20										
SEQ 21		CC								
SEQ 23										
SEQ 25										
SEQ 26	CAGTACTCCG	CC		AAAGATG	GTTATGCCAC	TGAT	TGGCACTTGA	CTCACCTCGG	GGGAATAATC	CAAAGAGGCC
SEQ 28										
SEQ 29										
SEQ 32 SEQ 34										
SEQ 34										
SEQ 37										
SEQ 39										
SEQ 41										
SEQ 43		CGACGTT								
SEQ 82	CAATACAGTG	CG		CGTGACG	GCTTTCAGCA	TCCG	TACCACATTG	CGCATTTGGG	ATCGTTTGCC	CTGCACGGTG
SEQ 84	CAGTACTCTG	CG		AACAATG	GICTICCIAC	1000	IACOIOILI			
	701	711	721	731	741	751	761	771	781	791
	701									
SEO 1										
SEQ 2										
SEQ 4										
SEQ 5		GATGGTCGAG GATGGTCGAG CTTCATCGAA								
SEQ 7										
SEQ 9	CCGGTCTCAT	GATGATCGAG	ACCACCTCCG	TTTCTCCTGA	GGGTGGA	TTATCACCTC	ATGATTTAGG	AATCTGGAAG	GATGAA	CA
SEQ 11										
SEQ 13	CAGCATTAAT	CATITIAGAG	GCCACCGGCG	TCCTCCCCAA	CGGCCGC	ATCACCCCCG	AGTGCTCTGG	TCTCTGGCAG	GACTCC	CGCCCGAGCA
SEQ 15 SEQ 17	ACTECCCTCAC	GATTCTCACC	GGCAACGTCC	AAGTCGACCA	CGCGCACAAG	GGCGACGCCC	ACGACATCAG	CCCCAACCAC	CCCGGCACCA	CGCCCGAGCA
SEQ 18										
SEQ 20										
SEQ 21										
SEQ 23										
SEQ 25	CCGCCCTGTC	CATGGTCGAG	GCCACCGCCG	TCGAGGCTCG	TGGCCGC	ATCTCCCCC	AGGATGTCGC	TTTGTGGCAG	GACTCG	CA
SEQ 26	CCGCCCTGTC	CATGGTCGAG	GCCACCGCCG	TCGAGGCTCG	CCCTCCC	ATCICCCCC	AGGATGTTGG	TCTGTGGGAA	GACGGC	CA
SEQ 28										
SEQ 29										
SEQ 32										
SEQ 34										
SEQ 36 SEQ 37	CGGGACTGTC	CATGGTAGAG	GCCACCGCTC	TTCAAAACCA	CGGTCGC	ATCACGCCTC	AGGACGTTG	TCTCTGGGA	GATGGA	CA
SEQ 37										
SEQ 41										
SEQ 43	GGGGCCAGAT	CCAGACGGG	AACGTCATGA	TCGACCCGG	GCACCTCGAC	GCCCCGGGCA	ACATGGTGG	CATCTCCCT	GACTCT	CGGGCGAGCG
SEQ 82										CA
SEQ 84	TGGGAAACGI	CATGGTCGAP	GCATCTGGT	TTGAGCCAGE	(GGGGAGG	ATCACGCCIC	, AGGACCIGG	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
			821	831	841	851	861	871	881	891
	801	811			_					
SEQ 1										
SEQ 2										
SEQ 4	GATTGAGCCA	TTGAGC	GCGTGATCG	A GTTTGTCCAC	AGTCAGAAC	- CAGCTTATCO	GCGTG	CAGATO	GCACACGCAC	GTCGCAAGGC GTCGCAAGGC
SEQ 5	GATTGAGCCA	TTGAGC	GCGTGATCG	GTTTGTCCA	AGTCAGAAC-	- CAGCTTATCO	GCGTG	CAGATI	CCCCATGCGG	GTCGCAAGGC GCCGGAAAGC
SEQ 7	ATTCCTGGG	CTGAAGG	GGGTCGTCG	GTTCATGCAC	GCACAGGGC-	- GCCAAGGTCC	GGATC	CAGCI	r GCGCATGGGG	GCCGGAAAGC GCCGCAAGGC
SEQ 9	GATTGCGCCC	:ATGAAG	GCGTCATCG	A CTTCGTGCA	T TCGCAGICC	CAGAMONTI	CCATC	CAATT	GGCCATGGT	GTAGAAAAGC
SEQ 11	AGCAGAGAA	ATTGAAAG	CAATTGTCG	TTACGCTCA.	I ICICAAAAG	CONTINUES	CTATA	CAATT	AATCACGCTC	GGCGAAAGAT
SEQ 13	AGCTCACAG'	r TTACGG/	AAATTGTTG	TTTTATICA	T TOCCAGGGC	- CAGAAGGCCC	GTATC	CAGCT	r GCCCACGCCC	GCCGCAAGGC GTCGCCAGAG
SEQ 15	GATTGCGCCC	CTCAAG	COMCCCCCC	CECCECECEC	C CTGAATGGC	- CAGTCCAAA	A CGCCTGTGG	r CGTGCAGAT	C AACCACCCTO	GTCGCCAGAG GTCGCCAGAG
SEQ 17	GACCGTCACC	2 GCCTTCAAGC	CCTGGGCGG	CGCCGCGCG	C CTGAATGGC	- CAGTCCAAA	A CGCCTGTGG	r CGTGCAGAT	C AACCACCCTC	G GTCGCCAGAG G GCCGCAAGGC
SEQ 18	CARCCOTCACO	P CTRCCCC	GCATCGTCG	CTACGTGCA	C AGCCAGGGC	- CAAAAGATC	G CCATC	CAACT	GCTCATGCC	GCCGCAAGGC GCCGCAAGGC
SEQ 20 SEQ 21	GATCGCTCC	rCTGCGC	GCATCGTCG	A CTACGTGCA	C AGCCAGGGC	- CAAAAGATC	G CCATC	CAACT	G GCTCATGCC	G GCCGCAAGGC G GTAGAAAGGC
SEQ 21	AATGAAGCC	GTTACGA	A GAATTGTTG	A ATTTGCTCA	T TCGCAAAAT	- CAAAAAATT	G GGATT	CAATT	GCGCATGCT	GTAGAAAGGC GTCGCAAGGC
SEQ 25	GATTGCGCC	SCTGAAG	GCATCGTCG	A CTTTATCCA	C TCGCAGAAC	- CAGGTCGCG	G CCATC	CAGCT	C GCCCACGCCC	G GTCGCAAGGC G GTCGCAAGGC
SEQ 26	GATTGCGCC	GCTGAAG	C GCATCGTCG	A CTTTATCCA	C TCGCAGAAC	- CAGGTCGCG	G CCATC	CAGCT	C TOCOLACION	GTCGCAAGGC GTCGCAAGGC
SEQ 28	GATCGAGCC'	rctgaag	C GCATCACCA	TTTCGCGCA	C AGTCAGAGC	CAGAAAAII	G GIAIC	CAGCT	G TCGCATGCG	GTCGCAAGGC
SEQ 29	GATCGAGCC'	rCTGAAG	C GCATCACCA	TTTCGCGCA	C AGTCAGAGC	- CAGAMANI I	G GIAIC			
SEQ 32					- 155515555	CCCAACATT	C CTATT	CAGAT	A GGTCATGCT	G GGAGAAAAGC
SEQ 34	GCTTGGACC	rCTCCGG	ATATTGTGG	A GITTGIACA	C AGCCAGGG	W CAGAAGATT	G GTAT	TCAGCT	C TCGCACGCT	G GTCGTAAGGC
SEQ 36	AATCGAGCC	CTTGAAG	C GCATCACTA	C TTTTGCCCA	C AGCCAAAGC	- CAGAAGATT	G GTAT	TCAGCT	C TCGCACGCT	G GTCGTAAGGC G GCCGCAAAGC
SEQ 37										
SEQ 39										
SEQ 41 SEQ 43										
SEQ 43	TGTTGAGGG	ACTGCGA	A AGCACGTCG	A GTTTGCCCA	T GCCAACAAC	- TCTCTTATC	G GTATC	CAGAT	G CANCECCO	G GTCGCAAGGC C ATGCGGGAAG
SEQ 84	TCGGGATGC	ACACAAG	G CGCTGGTGT	C GGTGCTCAA	G TCCTTCACG	- GATGGTCTG	G GTGTA	GGGCT	- Cruciaca	C ATGCGGGAAG

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	901	911	921	931	941	951	961	971		991
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SEQ 1			memer				-TTCTCGGCC	ATCGCGACGG	AGAAGGTCGG	CGGATGGCCG
SEQ 2										
SEQ 4	CAGCACCGTC	GCGCCATGGC	TCTCG				-GCCAACGAT	ACCGCCTCCG	AGAAGATGGG	CGGCTGGCCA
SEQ 5 SEQ 7	as amacacama	COCCCCCCCCC	TCCCC	~	GCGC	AGGUGGGCAA	GILLEMUILIG	WWGGCGGWIG	MOMOCGIIGO	Cadaracada
SEQ 7										
SEQ 11										
SEQ 13			AACAA ACTAC							
SEQ 15 SEQ 17		ACCCCC CCC	CCCCT		CTGT	GGGAGAAGGC	CGTGGCGCCC	TUGCUGGTGU	CGTTGGTGTT	GGGWGWGGCG
SEQ 18			CCCC7		CTCT	CCCAGAGGGC	GGTGGCGCCC	Thishhibitib	CG11GG1G11	GOGNONGACA
SEQ 20			ACGACTCCTT ACGACTCCTT	CACCACCACC	CCCC ACTATA	ACCCCAGAGA	CCCCTTACAG	GTCGTCGGAC	CCGAGTATGG	COCCIOCCI
SEQ 21										
SEQ 23 SEQ 25			monor			CACCCTCG	CGGCAAGGCG	CTGGCTCAGG	AGAGCGAGAA	COGCIGGCCC
SEQ 26			marace			CAGGCTCG	CCCCAAGGCC	LTGGLTLAGG	MUMUCUMUM	CGGCIGGCCC
SEQ 28			TAAGC							
SEQ 29 SEQ 32										
SEQ 32 SEQ 34			MCCRC				-CGCAAGAAC	ACTGCTTTTA		
SEQ 36		mamacamacam	TCACC				-ATCAACGCT	GTTGCCGCTA	AGGMMG1CGG	Iggciggcon
SEQ 37	TAGTTGTGTA	TCTCCGTGGT	TGAGC TAAGC				-ATCAACGCI	GTTGCTGGTG	AGGACGTCAA	CGGATGGCCA
SEQ 39 SEQ 41										
SEQ 41			> CCCCC			ATTACCEC	CACCGACGTG	CAGCTTAAGC	WORNOWIG	
SEQ 82		a-macmmccm	MACAC				-CCCGGACTT	GUCGUTGAAA	AGGCCGCTGG	IGGWIGGCCC
SEQ 84	GAAGGCCTCG	GACTGGTCAC	CTTTC		TACC	GCGGAGAAAA	GAAGCAAAAG	TTIGIGACGC	AGGAGGAAGG	100010000
	1001	1011	1021	1031	1041	1051	1061	1071	1081	1091
			-						*****	
	*******	********	GCGATATC				-CCCTTTGCG	GAGCCCTTCG	CCAAGCCCAA	GGCCATGACG
SEQ I		*********	たたたかがかがた				-ccctttccc	GAGCCCTTCG	CCAAGCCCAA	GGCCWIGWCG
SEQ 2 SEQ 4		**********	03330CTC				-CCCTTCACC	GTTAAGAACC	CIGIGUUGAA	GGMGMIGNCC
SEQ 5			CANDOCTC				-CCCTTCACC	GTTAAGAACC	CIGIGCCGAA	GGMGMIGNCC
SEQ 7		**********	CGGGCGGG CCACCGTG				-cccrrccac	GAGALTITCU	CLACCCCCAA	GGCCUITGUCC
SEQ 9 SEQ 11			CMCCATTC		~~~CCATTC-		-AGACCAAAT	GGTAATTTAC	CIGITOCIAN	TOVOTTOVICE
SEQ 13										
SEQ 15										
SEQ 17			CGAAAGTG CGAAAGTG							
SEQ 18 SEQ 20			CCCCCATC				-ccgrrcrcg	GAGGACTITC	CGAACCCCAA	GGAGALGACC
SEQ 21										
SEQ 23			ATGAAGAC GCGCGATT				- AGGTGGGGAU	GAAAACCACG	CICANCCICA	THEOTIME
SEQ 25							-CCTTACACU	AAGGACTGGG	CCACACCGCG	IGWOILGMCI
SEQ 26 SEQ 28			CCCCCAMC			GC	ACAAGAAAT	GUTGTGAACC	CMGIICCCMM	GGCIIICACG
SEQ 29			CCCCCTTC				ACAGGAAAAT	GGTGTGAACC	CAGIICCCAA	DOCT TT CHCG
SEQ 32			CGGCCATC							
SEQ 34 SEQ 36		-mmccmacmm	COCCCCCCC		~	(10)	ACAAGAAGUT	GGGGT GAACC	CIGIICCCUA	OGCC LICILOC
SEQ 37										
SEQ 39			GTGCGATC GTGCGATT CGGGTGGGGA							
SEQ 41										
SEQ 43 SEQ 82										
SEQ 84	GAT-CGTGTC	GTCGCTCCTT	CGGCCATC				-GCATATGCG	CAAGGTCACG	TTACCCCTCG	AGCTCTCACG
	1101	1111	1121	1131	1141	1151	1161	1171	1181	1191
	1101									
			TCAAGAAGGA				~~~~~~~			
SEQ 1										
SEQ 2 SEQ 4										
SEQ 5										
SEQ 7	ACGGCCGA-G	GTCCGTCAGG	TGAAGACCGC TGGTGGCGGC TCAAGCGCGA	GTTTGCGAAG	AGCGCGCGGC	TAGCGGTGCA	CGCTGGG	GCGGACTTCA	TCGAGATCCA	CAATGCCCAC
SEQ 9 SEQ 11										
SEQ 13										
SEQ 15			TCGTCGAGGC TCGTCGAGGC							
SEQ 17										
SEQ 18 SEQ 20										
SEQ 21										
SEQ 23			TAGTGGATAA GGGTGAAGAA							
SEQ 25										
SEQ 26 SEQ 28										
SEQ 29										
SEQ 32										
SEQ 34			mcnacaamca	CHRECKECCH	CCACCMAAAC	CAGCCAWCCG	CGCTGG1	TTTGATGTCA	TCGAGATCUA	TGCAGCICAT
SEQ 36 SEQ 37			* mannaana		CCDCCMDDDC	GAGCCAWCCG	CGCTGGT	TTTGATGTCA	LCGMGMICCM	IGCAGCICAL
SEQ 39			. <i> </i>	CTTMCCACAC	CCCCTCAACC	CCCCATTGAA	GGCIIII	1 TTTGATGTTA	TIGNONTIUM	. CANTUCACE
SEQ 41	GTCAGAGA-G	ATCAAGGAGA	TGGTCCAAGA	. CTGGGCGACA	GCAGCGAAAA	. GGGCGGTGAA	AGCGGGC	TTCGACGGTA	TCGAATTGCA	CGCCGCCCAC
SEQ 43 SEQ 82		**********	1 MCXXCCXCCX		CCTCTTCCTC	GAGCGGTTGA	AGCAGGA	LITIGACACIA	ricourtices	, IIICGCICAC
SEQ 84	ACCGAGGA-C	ATCAACAAGT	TGCAAGACAA	ATTCGTTCAG	TCGGCACGAT	GGGCGTTTGA	AGCTGGC	TATGACTACG	TCGAACTTCA	CAGCGCTCAC

	1201	1211	1221	1231	1241	1251	1261	1271	1281	1291
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SEQ 1	COMMANDERCO	MCMCCMC 3 MM	CCTCTCCCCC	GCCGCCAAC-						
SEQ 2										
SEQ 4	GGCTATCTTC	TGATGTCGTT	CCTCTCCCCT	GCGGTCAAC-						
SEQ 5										
SEQ 7 SEQ 9										
SEQ 11										
SEQ 13										
SEQ 15										
SEQ 17	CCIMICOCCO	MCCCCCC & COT	COMCACCAAC	**************************************			~~~~~~~			
SEQ 18 SEQ 20	CCMM3 CCMC3	MCACCCA COM	CCTTTCCCCC	CTATCAAACC	TAACTCCAGA	TACTITUDE TO	GGGGCTGTGC	GCATACTCCC	TCGGGTGTGA	CTTCTATTAA
SEQ 21										
SEQ 23	aamma mamma	mamocmox ac	A COURT COUCCO	CCCACTAAT-	~======					
SEQ 25										
SEQ 26				CTD ACCA AT-						
SEQ 28		macamaa amm	EMMC > CMCCC	に 中れることももで→					~	
SEQ 29 SEQ 32										
SEQ 34										
SEQ 36	GGATACKTGC	TTCACCAGTT	CTTGAGTCCA	GTCAGTAAC-						
SEQ 37										
SEQ 39										
SEQ 41 SEQ 43										
SEQ 82										
SEQ 84	GGATACCTGA	TGCACTCGTT	CCTCAGCCCG	TTGACCAAT-						
	1301	1311	1321	1331	1341	1351	1361	1371	1381	1391
	1301							1371		
				~						
SEQ 1			AACCGCAC	GGACCAGTAC	GGCGGGTCGT	TCGAGAACCG	CATCCGGCTG	TCTCTCGAGA	TTGCGCAGTT	GACTCGGGAC
SEQ 2			AACCGCAC	GGACCAGTAC	GGCGGGTCGT	TCGAGAACCG	CATCCGGCTG	TCTCTCGAGA AGTCTGGAGA	TCGCCAAGCT	CACCCGCGAA
SEQ 4			ACCACAAC	ACACGAGTAC	GGAGGCAGTT	TTGAGAATCG	CATCCGGCTC	AGTCTGGAGA	TCGCCAAGCT	CACCCGCGAA
SEQ 5 SEQ 7	_		NACCCCAC	CCATCCCTAC	GGCGGGAGCT	TTGAGAACCG	GACCCGGATC	GTGCGCGAGG	TIGCGGCGGC	TATICGIGCG
SEQ 9			>CCCCCCAC	CCACCACTAC	GGCGGCTCCT	TTGAGAACCG	CATCCGGCTC	TCTCTCGAAA	TCGCCCAGGT	CACCCGTGAC
SEQ 11			AAGAGAAC	AGATGAATAC	GGTGGCAGTT	TTGAAAATAG	AACCAGATTT	TTAAAGGAAG	TTATCGATAG	TGTTAAATCA
SEQ 13			NACACACC	TCACCAATAC	CCCCCCTCAT	TTGAAAACAG	ACTTACATTT	CTTTTACAAA	TAATTGAGAA	TATAAAACGA
SEQ 15			~-CAGCGTAC	CGACCAGTAC	GGTGGCTCCT	TCGAGAACCG	CACCCGCGTT	CTCCGCGAGA	TCATCTCGGC	CUTCCUCTCC
SEQ 17			AGGCGCGG	GGATGAGTAT	GGCGGGTCGG	CTGAGAACAG	GGCGAGGATT	GTTGGGGAGA	TTATTAAGGA	GTGCAGGAGG
SEQ 1B			~-AGGCGCGG	GGATGAGTAT	GGCGGGTCGG	CTGAGAACAG	CACCCCCCCTC	GTTGGGGAGA CTGATCGATA	TTATCAAGGC	CGTCCGGGCA
SEQ 20	CATTTTATTT	CCTGGCACGC	AGAAACGGAC	AGACAAGTAC	GGCGGCAGCT	TTGAGAACCG	CACCCGGGTC	CTGATCGATA	TTATCAAGGC	CGTCCGGGCA
SEQ 21 SEQ 23			CACCCCAA	TGACAAGTAT	GGTGGGACAT	TTGAGAAACG	TATTTTGTTT	CCTATGGAAG	TTGTCCATTC	TGTTCGTAAA
SEQ 25										
SEQ 26										
SEQ 28			~~~~~~~~	CCACCACTAT	CC					
SEQ 29				CCACGAGTAT	GG					
SEQ 32			AAC	CGACGAGTAT	GGTGGCAGTT	TCGAGAACCG	TATCAGAGTT	GTCTTGGAAA	TCCTTGACCT	CAICCGCGCI
SEQ 34				CCATCACTAT	GGTGGCAGCT	TCGAGAACCG	TATCAGAGTC	GTCTTGGAGA	TCATTG	
SEQ 36 SEQ 37			CAAAGAAC	CGATGAGTAT	GGTGGCAGCT	TCGAGAACCG	TATCAGAGTC	GTCTTGGAGA	TCATTG	
SEQ 37			CCAGGACC	GACAAGTACG	GGCGGAAGCT	GGGAAAACCG	CACTCGTCTG	ACAATGGAAA	GTCGTCGACC	TTGTCCGCAG
SEQ 41			>-CGCCGGAC	AGATTCTTAC	GGCGGTTCTT	TCGAAAACCG	TACCCGTCTA	CTCATTGAAA	TCGTAACAGC	CGICCGWGCC
SEQ 43			CACCCCAC	CCACGAGTAC	GGCGGCAGCC	TCGAAAACCG	CATGCGGCTA	ATCCTCGAGG	TCACGGCCGA	GGTCCGCAGG
SEQ 82			A A C C C T A C	CCACAACTAC	GGAGGTAGCT	TCGAGAACAG	AGTGCGCCTT	GCTCTCGAGA	TTGTCGAGGC	IGUAUGAGUI
SEQ 84			~-CAGCGTAC	CGACGAGTAC	GGCGGTAGCC	TGGAGAACCG	CGCTCGATTT	CTGCTCAACG	TIGCCCGICG	AATCCGCCAA
	1401	1411	1421	1431	1441	1451	1461	1471	1481	1491
								8		
								*****	*	
SEQ 1	ano cmanaga	CHCAMCHCCC	C			CCTGCGCATT	TCGGCCTCGG	ACTGGTGCGA	GUAGACCCIG	CCGGW
SEQ 2	GCCGTCGGCC	CTCATGTGCC	C		GTTT	CCTGCGGGTC	TCCGCCACCG	ACTGGTGCGA ATTGGCTGGA	GGAGGTGCAG	CCGAA
SEQ 4 SEQ 5		3 CC3 M3 MCCC	m			CCTCCCGGTC	TCCGCCACCG	ATTGGCTGGA	GGAGGTGCAG	CCGAA
SEQ 5 SEQ 7		* CCCC* MCCC	C		CTCTT	TOTOGOTATO	AGCGCCACGG	AGTGGTTGGA	GGGTCAGCCG	GTGGC
SEQ 7	CCCCMCCCCC	CCARCCUTCC	Ф		GTTTT	TCTCCGTGTC	TCCGCGACGG	ACTGGATCGA	GGAGACCCTC	CCCGA
SEQ 11	3 CM 3 MMCG 5 3	A CCAMCDDCC	A		CTCTT	TTTGAGAATC	TCTGCTGCTG	AAAATAGTCC	J.CWICCW	
SEQ 13	********	~n	C		ATTTT	CTTAAAGTTT	CCAATGTCAG	ATAATTGTAG	TGATCCG	
SEQ 15	GTCATCCCCG	AGGACATGCC	C		CTCTT	CGTCCGTGTC	TCCGCCACCG	AGTGGATGGA ATTGGCAGGC	GGGACGCGAT	GGAA
SEQ 17	GROOMGROOMC	ACCCCCMCCC	TCAACACCAC	CCCAACAAGT	TTGTGGTGGG	AATCAAGCTG	AACAGTGCGG	ATTGGCAGGC	GGGACGCGAT	GGAAAG
SEQ 18 SEO 20	COC A MMCCCC	ACCACAMCCC	A			CGTCCGAATC	TUCUUURUUG	WATCHVICK	GIACGCCGGC	
SEQ 20 SEQ 21	CMC NMMCCCC	NCCNCNECCC	A		CTCTT	CGTCCGAATC	TCCGCGACCG	AATGGATGGA	GTACGCCCGC	
SEQ 23		************	C		TTGTT	ጥጥልጥልሮልሮጥል	ACGGCTACAG	ATTGGTTGCC	CAAAGGACAA	
SEQ 25										
SEQ 26										
SEQ 28										
SEQ 29		3 3 5 CM 3 C 3 CC	T		GTCCT	CGTTCGTGTC	AGTGCAACTG	ATTGGTTCGA	GTTTGACTCT	CAATTCAAAG
SEQ 32										
SEQ 34 SEQ 36										
SEQ 37										~
SEQ 39	a x mm									
SEQ 41	ACCUMANCE OF THE	CCACCAMCCC	T		~~~~CTCTT	CCTCCGCCTC	TCCTCTACAG	AATGGATGGA	AGATACCGAC	ATCGGC
SEQ 43	CGGACGAGCA	AGAATTTCAT	C		CTCGG	CATCAAAATT	AACAGCGTCG	ACTRICCAGGA	GAACAACCCT	GAG
SEQ 82	GTTATGCCTG	AGGACATGCC	C		TTGTT	CACTOGCATO	AGCTCCACCG	ACTGGGCCGA	CCAAGCGCAC	GAG CAA
SEQ 84	GAATTCCCCA	ACAAGGGT				GGTGCGTC				

		1501	1511	1521	1531	1541	1551	1561	1571	1581	1591
									*****	******	*****#####
SEQ	1		GCAGAGCTGG	AAGTCGGAGG	ATACCGTGCG	GTTCGCGCAG	GAGCTGGTCA	AGCAGGGCGC	CGTTGATCTG	ATCGATATCA	GCAGCGGTGG
SEQ	2		GCAGAGCTGG	AAGTCGGAGG	ATACCGTGCG	GTTCGCGCAG	GAGCTGGTCA	AGCAGGGCGC	CGTTGATCTG	ATCGATATCA	GCAGCGGTGG
SEQ	4	CAA	GCCCAGCTGG	CGAGGCGTGG	ACACTGTCCG	ATTTGCGAAG	ATCCTGGCAG	AAACGGGTTA	CGTTGACGTG	CTTGACGTGA	GCAGTGGCGG
SEQ	5						ATCCTGGCAG				
SEQ	7						AAGAAGCTGC				
SEQ							GCCCTCGCTG				
SEQ							GACATTTTAG				
SEQ							GATCTTGTTA				
SEQ							AAGATCCTCC				
SEQ							GAGCTTTTTG				
SEQ		GAGGAGGA	CCCTACCTCC	CACCTCCACC	ACCCOUNC-	AGCAGATT	GAGCTTTTTG AAGCTCCTCC	CCCACTGGGG	TCTCCACTT	CTCCACGTIA	CCTCCCCCCC
SEQ		GA	GCCTAGCTGG	GACCICGAGC	AGAGCACAC-	AGCTTGCC	AAGCTCCTCC	CGGACCTGGG	TGTCGACCTG	CTCGACGTCA	CTCGGGCGG
SEQ		GA	GGATGG	GAGATAGAAG	ATACAGTTG-	CATTAGCA	GCGAGGCTTC	GCGATGGTGG	TGTTGACTTG	ATAGATGTTA	GCTCTGGTGG
SEQ											
SEQ											
SEQ				~							
SEQ	29										
SEQ							CGTATCTTGC				
SEQ											
SEQ											
SEQ											
SEQ							AAAATCCTGG				
SEQ							GAGGCCCTCG				
SEQ		TACGAGGG	AGAGACCTGG	ACTCTTGAGC	AGAGCATCA-	AGCTTGCA	CACCAGTTAG	CAGACCGTGG	TGTCGATGTT	TTGGATGTTT	CCAGTGGTGG
SEQ							AAGATGCTCC				
OLQ.	••		00.10101140								
		1601	1611	1621	1631	1641	1651	1661	1671	1681	1691
		*****	######								
SEO	1	TOTTOTOGOG	CAG								
SEQ		TOTTOTOGOG	CAG								
SEQ		CACTCATTCG	GAG								
SEQ	5	CACTCATTCG	GAG								
SEQ		GAACCACAAG	GAC~								
SEQ		TGTCCACGCC	GCG~								
SEQ		TAACGATTAT	AGA								
SEQ		AAATGTTGCG	CAT								
SEQ		CAACAACAAG	GAC		mamman.ca	>=======		macman and		200022022	TCCT A ACCCC
SEQ		TTATGAGGAT	CCTCAGGTAA	GTTTTGGTGT	TGTTTGAGGG	ATGGGGCAAG	GGGTTGTCTG	TCGTGAACAA	CAAAAGGGGG	ACGGAACAAA	IGCIAACGCC
SEQ		TTATGAGGAT	CCTCAG								
SEQ		AAACTCCCTC	GCC	~~~~~							
SEQ		TAATCACAAG	GAT								
SEQ				~~~~~							
SEQ											
SEQ											
SEQ											
SEQ	32	TATCCATCCT	AAG								
SEQ											
SEQ											
SEQ											
SEQ											
SEQ		GAATCATCCT	CAG								
SEQ		CATCCACAAG	ATG								
SEQ		CCTGGTTCCA	TTC								
		1701	1711	1721	1731	1741	1751	1761	1771	1781	1791
			*********	********	*****	##					
SEQ	1			CAG	AAGATCAAGT	CCGGCCCTGC	CTTCCAGGTG	CCTTTTGCCG	TGGCCGTGAA	GAAGGCCGTC	GGCGAC
SEQ				CAG	AAGATCAAGT	CCGGCCCTGC	CTTCCAGGTG	CCTTTTGCCG	TGGCCGTGAA	GAAGGCCGTC	GGCGAC
SEQ	4			CAG	CATATCCACG	CGAAGCCAGG	CTTCCAGGCA	CCCTTTGCTA	TTGCCGTCAA	GAACGCCGTC	GGGGAC
SEQ	5										
SEQ				CAG	AAGATCAACC	TGCACACGGC	CTACCAGACG	GACCTGGCCG	GGCAGATTCG	CCAGGCCATC	CGAGCG
SEQ				CAG	AAGATCAAGT	CCGGGCCGGC	TTTCCAGGCT	CCCTTCGCTG	TGGCTATCAA	GAAGGCCGTT	GGCGAT
SEQ							AATCCATGTT				
SEQ		т									
SEQ		ATACAGATGG									
SEQ		ATGG									
SEQ											
SEQ											
SEQ				CAA	AGAATTGAGG	TGAAGGATTG	CTATCAAGTT	CCTTTTGCGG	AAAAGATTAA	GGATCAAGTG	AATGGA
SEQ	25										
SEQ	2€										
SEQ											
SEQ											
SEQ				-TCCGCCATC	GCCATCAAGT	CCGGTCCTGC	TTACCAGGTA	GACCTCGCCA	AACAGGTAAA	GAAGGCTGTT	GGCGAT
SEQ											
SEQ											
SEQ											
SEQ											
SEQ		G	GTTTTGCGCA	CCGCAAGGAG	TCCAGCCGCA	AGCGGGAGAA	CTATTTTATC	GAGTTCGCCG	AGGTCATCCG	CAAGGCCGTC	AAGCAC
SEQ											
SEQ											

		1801	1811	1821	1831	1841	1851	1861	1871	1881	1891
SEC	1	AAGCT	GCTGGTTGCC	GCCGTGGGTG	CCATCACC					AACG	GCAAGCAGGC
SEC		AAGCT	GCTGGTTGCC	GCCGTGGGTG	CCATCACC					AACG	GCAAGCAGGC
SEC		AAACT	CGCAGTGGCA	TCAGTGGGTA	TGATTGCC					AGCG	CGCATTTGGC
SEC		AAACT	CGCAGTGGCA	TCAGTGGGTA	TGATTGCC	CARCACCCAR	TCGGAACAGG	CCACCCCACT	ACTTCACCGA	AGCG	CGCATTTGGC
SEC		AAGCT	COTTGTTGCG	ACCGTGGGCA	CGATCACG	~				AACG	GTAAGCAGGC
	111	AAGTT	ATTGGTCAGT	TECETTEETE	GGCTTGAA					A	AAGATCCTGA
	13	CGATG	TTTGATCGCA	TGCAGTGGAG	GATTAGAT					C	GAGACATATT
	15	GCAAGCAGCT	CCTCGTCGGT	GCCGTCGGCT	TGGTCACC	TCG	GCTGAGATCG	CCAAGGAGAC	CGTCCAGGAG	AAGGAGGATG	GCAGAGTCAC
	17	TCCCCAAGCT	TCCTCTCATG	GTCACCGGCG	GCTTCCGC					ACTC	GTCAGGGCAT
	2 19 2 20	TCCCCAAGCT	CCTCTCATG	CCCCTCCCCA	ACATCAAC					ACGG	CTGACATTGC
	2 21	AGGTT	GCTCATAGGC	GCGGTCGGCA	ACATCAAC					ACGG	CTGACATTGC
	23	AT	ACTACTTGGC	GCTGTCGGAA	TGATCAGG					GATG	GTCTTACGGC
	25										
	26										
	28 29										
	32	AGTGT	ACTTGTTTCA	GCAGTAGGTG	GAATCAAG~~					A	CTGGACATCT
	34										
	36										
	37										
	39 341										
	43	ATGGT	GGTCTACACC	ACCGGCGGCT	TCAAGACG					GTGGGCG	CCATGGTCGA
SEC	82	AAGAT	GTTGATCAGC	ACTGTTGGTA	GCATCAAG					ATAG	GTACCCTTGC
SEC	84	ATCGAACC	CGACGCGTCC	AAACGCATGC	TCGTCGGGG~					CCGTGG	GAATGATGGA
		1901	1911	1921	1931	1941	1951	1961	1971		1991
				10010000							
SEC		GAATCAG	ATTCTAG	AGGAGCAG							
SEC		C X A DISCO	mmcmmcc	ACAACCAC							
SEC		C N N TTCC		ACAACCAC							
SEC		CCACCCAATC	CTGTCGGGAC	CTGAACCC							
SEC	2 9	GAACAAG	CTGCTTG	AGGAGGAG							
		ATTGCTCAAC	AAATATTTAG	AAGAAGGA							
	13 15	CATCCAGCGC	GAGTTTATTG	CCAAGACT							
	17	CCNCCCC		AATCCCAT							
	18	GGAGGCC	GCTTTGG	AATCCGAT							
	20	GCGCGATGTC	GTGGATGAGC	AGGGCGCCGA	GAAGGTGGCC	GAGGCCAAGC	AGACGCATGA	CACCATCGAG	GTCGTGAGCG	AATCACATGG	CGGCAAGACC
	21	GCGCGATGTC	GTGGATGAGC	AGGGCGCCGA	GAAGGTGGCC	GAGGCCAAGC	AGACGCATGA	CACCATCGAG	GTCGTGAGCG	AATCACATGG	CGGCAAGACC
	23	GAATGAAATC	CTAGAAAGTG	GAAAAGCT							
	26										
	28										
	20										
		TGCTGAA	GAGGTTT	TGCAATCT							
	34										
	37										
	39										
SEQ											
	43	CGCGCTGCAG	GGCGTCGATG	GG							
SEQ	82	GGAGGAG	ATCATCG	CCCCCAAC~-	GGACGATACC						
250	, 04	AGG11CC	IACOAII	000001110							
		2001	2011	2021	2031					4	2091
SEQ	1	GATATCGACG	TTGCGCTGGT	TGGCCGTGGG	TTCCAGAAGG	ATCCCGGTCT	GGCCTGGACG	TTTGCTCAGC	ACCTCGGCGT	C	
SEQ	2	GATATCGACG	TTGCGCTGGT	TGGCCGTGGG	TTCCAGAAGG	ATCCCGGTCT	GGCCTGGACG	TTTGCTCAGC	ACCTCGGCGT	C	
SEQ	4	GGACTGGACC	TTGTGCTGGT	TGGACGTGGC	TTCCAGAAGA	ACCCGGGGCT	GGTGTGGGCG	TGGGCCGACG	AGCTGAATGT	A	
SEQ	. 5	CCACTCCACC	TTGTGCTGGT	TEGACGTEGE	TTCCAGAAGA	ACCCGGGGGCT	GGTGTGGGGCG	TGGGCCGACG	AGCTGAATGT	A	
SEQ		AAGGCGGATG	CCATTCTGAT	AGCCCGTCAG	TTCCTGCGCG	AGCCAGAATG	GGTGTTTTCC GGCGTGGACT	TTCGCCCACC	AUCTTOGGCGT	T	
SEQ	11	ACATTGGATG	TTGCGCTTGT	CCCTAGAGGA	TTTTTAAGAA	ATCCAGGTTT	GGTATGGGAG	TTTGCCGATA	AACTTGGTGT	T	
	1.3	GACTTTGATA	TAGCATTGAT	AGGTAAAGGA	TTTCTCAAAA	ACACTGGATT	GATCAGCCGT	ATTGCTGACC	AATTGCAAGC	A	
	15	CGTGCCGATA	TGGTCCTTGT	TGCCAGGCAG	TTCTTGAAGG	AGCCCGAGTT	CGTCCTCACT	GTCGCCGACG	AGTTGGGTGT	T	
SEQ	17	GATTGCGACA	TGATCGGTAT	CGGACGCCCG	GCCATCATCA	ACCUTTCGCT	TCCCGCCAAC	TTGATCCTCA	ACCCGGAGGT	G	
	18	GATTGCGACA	TGATCGGTAT	CGGACGCCCG	GCCATCATCA	ACCOTTCGCT	TCCCGCCAAC TGTGCTGAGG	ACGCCCCATA	ACCUMENCE	C	
	20 21	AAGGCGGATC	TGGTCCTCAT	TGCTCGCCAG	TTCCTGCGCG	AGCCTGAGTT	TGTGCTGAGG	ACGGCGCATA	ACCTTGGGGT	C	
	23	GATG	TTACTTTTGT	CGCAAGGGAG	TTCTTAAGGA	ACCCGTCGTT	GGTGCTAGAC	AGCGCGAACC	AGTTGGGTGA	A	
	25						~				
SEQ	26										
	29	CCTATCCACA	TTGTGAGGG	TEGACGTTEG	TTCCAACAGA	ATCCTGGTCT	GGTTCGAGCT	TTTGCTAACG	AGCTTGGCGT	G	
	32 34	GGIAICGACA					GGIICGAGCI				
	36										
SEQ	37										
	39										
	41 43						CGCCAAGGAC				
	82	CCCTTGGATC	TTGTGGCTTC	AGGCCGTCTG	TTCCAGAAGA	ACACTGGACT	TGTTTGGTCA	TGGGCTGACG	ATCTGAACAC	T	
	84	GGCCAAGACC	GCAGCCAGAT	TGGCAAGTTG	GCCGAGCAGT	CGATTCAGAG	CGGAGAGTGT	GATGCGGTAC	TGTTGGCACG	T	GGATTGA

	2101	2111	2121	2131	2141	2151	2161	2171	2181	2191
					11	***				
SEQ 1						CGCTGGGGCT				
SEQ 1 SEQ 2			GAAA	TCTCCATGGC	CAACCAGATC	CGCTGGGGCT	TCACCCGGCG	TGGAGGCACC	CCGTACATTG	ATCCTTCGGT
SEQ 4			GAGA	TCTCCATGGC	TAATCAGATC	CGATGGGGTT	TCTCGCGGCG	CGGTGCTGGT	CCTTACCTCA	GGAAGAAACT
SEQ 5			GAGA	TCTCCATGGC	TAATCAGATC	CGATGGGGTT	TCTCGCGGCG	CGGTGCTGGT	CCTTACCTCA	GGAAGAAACT
SEQ 7			CCGG	TGACTGTCCC	GGTGCAGTTT	GGCAGGGCCA	TTTAG			
SEQ 9			GAGA	TTGCGATGGC	GAGTCAGATT	CGGTGGGGAT	TCACAAGGCG	CGGGGGCACG	CCTTATATCG	ACCCCAAAGC
SEQ 11			AGAC	TCCACCAGGC	CTTGCAGTTA	GGTTGGGGTT AAGTTGGCCT	TCTGGCCCAA	CAAACAACAA	ATTGTTGATT	TGATTGAAAG
SEQ 13 SEQ 15			CAAT	TCAGAACAGC	TOTTCAGTAC	CTCCGTGGTC	CTCTTACCAC	CAGGCCCAAG	AAGTTGACCA	CTGTTCCTTA
SEQ 17			CCGG	ATGCGGATGC	CCGCTTGTTC	GACAAGAAGA	GGGCTGAGCG	GCACTGGATC	GTTGAGAAGT	TGGGCATGAA
SEQ 18			CCGG	ATGCGGATGC	CCGCTTGTTC	GACAAGAAGA	GGGCTGAGCC	GCACTGGATC	GTTGAGAAGT	TGGGCATGAA
SEQ 20			~AATG	TGCAGTGGCC	TCACCAATAC	CACAGAGCAG	TGTGGCGCAA	GGGTGCAAGG	ATTTGA	
SEQ 21			AATG	TGCAGTGGCC	TCACCAATAC	CACAGAGCAG	TGTGGCGCAA	GGGTGCAAGG	ATTTGA	
SEQ 23			AATG	TTGCATGGCC	AGTTCAGTAT	GACTATGCAG	TTAAGGGACA	CAGAAAGTTA	CGTTGA	
SEQ 25										
SEQ 26										
SEQ 28 SEQ 29										
SEQ 32						GATTGGAGCT				
SEQ 34										
SEQ 36										
SEQ 37										
SEQ 39										
SEQ 41						AGGCTGATGG				
SEQ 43	TGGGGGAGGA	CGAGTTTGTG	CTGCAGTIGA	TCCAGATCCC	TCATCAGATC	GCATGGGGTT	TOGGTGGCAG	AGCTAAGAAG	AACGCTCCCA	AGCTTGTCTT
SEQ 82 SEQ 84	TOTOTACO	DAGCTGGACC	CACCATCCTA	GTGTAGCGCT	GATGGGTACC	AGGGCAGCTG	GCAACCCGCA	GTACCATCGC	GTTCACGTGG	CTAAGAAGTG
2EQ 04	TGICCIACCC	ANGCIGGACC	GAGGAIGCIA	oromacoor	oni decine	noodonooid	40121000001	011100111111		
	2201	2211	2221	2231	2241		2261	2271	2281	2291
SEQ 1			3 m a m 3 m 5 C							
SEQ 2										~~==~=
SEQ 4 SEQ 5	CCACAACATA	TAA								
SEQ 7										
SEO 9	##3#33#G36	3.CC3.MCMMMC	A CM							
SEQ 11	AACATCTAAA	TTAGAAGTAA	ATTAG							
SEQ 13										
SEQ 15	A									
SEQ 17	GTCCATTGTT	GGTGCTGGTG	TTGAGGTGGT	ACGTCACGTT	CCAACCCCAT	TTGCTTCATT	GTGTTTCCGA	GTATGTCATG	CTGACTTGGT	TCTTTTCTAG
SEQ 18	GTCCATTGTT	GGTGCTGGTG	TTGAGGTG							
SEQ 20										
SEQ 21										
SEQ 21 SEQ 23										
SEQ 21 SEQ 23 SEQ 25										
SEQ 21 SEQ 23 SEQ 25 SEQ 26										
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29										
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32										
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34	G									
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36	G									
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37	G									
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 37	G									
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 37 SEQ 39 SEQ 41	G						AAACGCCGAC	GAGGTGGCGC	GGGTGACGCA	GTTGATGGCG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 32 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 39 SEQ 41 SEQ 43	G					ATCTC	AAACGCCGAC	GAGGTGGCGC	GGGTGACGCA	GTTGATGGCG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 37 SEQ 39 SEQ 41	G						AAACGCCGAC	GAGGTGGCGC	GGGTGACGCA	GTTGATGGCG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 39 SEQ 41 SEQ 43 SEQ 43 SEQ 43	G					ATCTC	AAACGCCGAC	GAGGTGGCGC	GGGTGACGCA	GTTGATGGCG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 39 SEQ 41 SEQ 43 SEQ 43 SEQ 43	G	2311	2321	2331	2341		AAACGCCGAC	GAGGTGGCGC	GGGTGACGCA	GTTGATGGCG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 39 SEQ 41 SEQ 43 SEQ 43 SEQ 43	G	2311	2321	2331	2341	ATCTC	AAACGCCGAC	GAGGTGGCGC	GGGTGACGCA	GTTGATGGG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 34 SEQ 34 SEQ 36 SEQ 37 SEQ 41 SEQ 41 SEQ 42 SEQ 82 SEQ 82	G	2311 GAGTTGAAGA	2321	2331 TAGACGATCA	2341 	ATCTC	AAACGCCGAC	GAGGTGGCGC	GGGTGACGCA	GTTGATGGG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 39 SEQ 41 SEQ 43 SEQ 43 SEQ 43	GAAAA	2311 	2321 TGATACCTCA	2331 TAGACGATCA	2341	ATCTC	AAACGCCGAC 2361 TCTCGTCTCC	GAGGTGGCGC	GGGTGACGCA 2381 CAAGGTATTC	GTTGATGGCG 2391 ACAGTAGCTG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 41 SEQ 43 SEQ 43 SEQ 43 SEQ 82 SEQ 84	GA	2311 GAGTTGAAGA	2321 TGATACCTCA	2331 TAGACGATCA	2341 ATGGACCCTT	2351 GCATATTATT GCATATTATT	AAACGCCGAC TOTCGTCTCC T	GAGGTGGCGC 2371 TGCGTATGTT	GGGTGACGCA CAAGGTATTC	GTTGATGGCG 2391 ACAGTAGCTG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 37 SEQ 41 SEQ 41 SEQ 82 SEQ 82 SEQ 84	GA	2311 GAGTTGAAGA	2321 TGATACCTCA	2331 TAGACGATCA	2341 ATGGACCCTT	2351 GCATATTATT GCATATTATT	AAACGCCGAC TCTCGTCTCC	GAGGTGGCGC 2371 TGCGTATGTT	GGGTGACGCA 2381 CAAGGTATTC	GTTGATGGG GTATGATGGGG ACAGTAGCTG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 34 SEQ 36 SEQ 37 SEQ 41 SEQ 43 SEQ 82 SEQ 84 SEQ 82 SEQ 84	GA	2311 GAGTTGAAGA	2321 TGATACCTCA	2331 TAGACGATCA	2341 ATGGACCCTT	2351 GCATATTATT GCATATTATT	AAACGCCGAC TCTCGTCTCC	GAGGTGGCGC 2371 TGCGTATGTT	GGGTGACGCA 2381 CAAGGTATTC	GTTGATGGG GTATGATGGGG ACAGTAGCTG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 41 SEQ 43 SEQ 43 SEQ 82 SEQ 84	GA	2311 GAGTTGAAGA	2321 TGATACCTCA	2331 TAGACGATCA	2341 ATGGACCCTT	2351 GCATATTATT GCATATTATT	AAACGCCGAC TCTCGTCTCC	GAGGTGGCGC 2371 TGCGTATGTT	GGGTGACGCA 2381 CAAGGTATTC	GTTGATGGG GTATGATGGGG ACAGTAGCTG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 34 SEQ 36 SEQ 37 SEQ 41 SEQ 43 SEQ 82 SEQ 84 SEQ 82 SEQ 84	GA	2311 GAGTTGAAGA	2321 TGATACCTCA TGATACCTCA	2331 TAGACGATCA	2341 ATGGACCCTT	2351 GCATATTATT GCATATTATT	AAACGCCGAC 2361 TCTCGTCTCC	GAGGTGGCGC 2371 TGCGTATGTT	GGGTGACGCA 2381 CAAGGTATTC	GTTGATGGCG 2391 ACAGTAGCTG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 29 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 41 SEQ 41 SEQ 82 SEQ 84 SEQ 82 SEQ 84 SEQ 82 SEQ 84 SEQ 5 SEQ 7 SEQ 9 SEQ 9 SEQ 9 SEQ 9 SEQ 9 SEQ 9 SEQ 9 SEQ 11 SEQ 13	AAA-GTATAGATA	2311 GAGTTGAAGA GAGTTGAAGA	2321 TGATACCTCA TGATACCTCA	2331 TAGACGATCA TAGACGATCA	2341 ATGGACCCTT ATGGACCCTT	ATCTC	AAACGCCGAC TCTCGTCTCC T	GAGGTGGCGC	GGGTGACGCA 2381 CAAGGTATTC	GTTGATGGCG 2391 ACAGTAGCTG
SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 37 SEQ 41 SEQ 41 SEQ 82 SEQ 84 SEQ 82 SEQ 84 SEQ 5 SEQ 7 SEQ 7 SEQ 7 SEQ 7 SEQ 7 SEQ 7 SEQ 11 SEQ 13 SEQ 13 SEQ 13 SEQ 13 SEQ 13 SEQ 13	A	2311 GAGTTGAAGA GAGTTGAAGA TGAAGGAGCTTGAAGA	2321 TGATACCTCA TGATACCTCA	2331 TAGACGATCA TAGACGATCA GCCCAAGTTTT	2341 ATGGACCCTT ATGGACCCTT	2351 GCATATTATT GCATATTATT	AAACGCCGAC 2361 TCTCGTCTCC T	GAGGTGGCGC 2371 TGCGTATGTT	GGGTGACGCA 2381 CAAGGTATTC	GTTGATGGCG 2391 ACAGTAGCTG
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SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 37 SEQ 41 SEQ 41 SEQ 82 SEQ 84 SEQ 82 SEQ 84 SEQ 5 SEQ 7 SEQ 7 SEQ 7 SEQ 7 SEQ 7 SEQ 7 SEQ 11 SEQ 13 SEQ 13 SEQ 13 SEQ 13 SEQ 13 SEQ 13	A	2311 GAGTTGAAGA GAGTTGAAGA TGAGCGAGCT TGAGCGAGCT	2321 TGATACCTCA TGATACCTCA CAAGAAGCTG CAAGAAGCTG	2331 TAGACGATCA TAGACGATCA GCCAAGTTTT GCCAAGTTTT	2341 ATGGACCCTT ATGGACCCTT ATGACCATA AGAG	2351 GCATATTATT GCATATTATT	AAACGCCGAC 2361 TCTCGTCTCC	GAGGTGGCGC 2371 TGCGTATGTT	GGGTGACGCA 2381 CAAGGTATTC	GTTGATGGCG 2391 ACAGTAGCTG
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SEQ 21 SEQ 25 SEQ 25 SEQ 26 SEQ 29 SEQ 34 SEQ 37 SEQ 39 SEQ 41 SEQ 43 SEQ 82 SEQ 84 SEQ 1 SEQ 1 SEQ 1 SEQ 1 SEQ 1 SEQ 1 SEQ 2 SEQ 1 SEQ 1 SEQ 1 SEQ 1 SEQ 2 SEQ 1 SEQ 2 SEQ 1 SEQ 2 SEQ 1 SEQ 2 SEQ 2 SEQ 3	A	2311 GAGTTGAAGA GAGTTGAAGA TGAGCGAGCT TGAGCGAGCT	2321 TGATACCTCA TGATACCTCA CAAGAAGCTG CAAGAAGCTG	2331 TAGACGATCA TAGACGATCA GCCAAGTTTT GCCAAGTTTT	2341 ATGGACCCTT ATGGACCCTT ATGGACCCTT AG	2351 GCATATTATT GCATATTATT	AAAACGCCGAC TCTCGTCTCC T	GAGGTGGCGC 2371 TGCGTATGTT	GGGTGACGCA 2381 CAAGGTATTC	2391 ACAGTAGCTG
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SEQ 21 SEQ 25 SEQ 25 SEQ 26 SEQ 29 SEQ 34 SEQ 37 SEQ 39 SEQ 41 SEQ 43 SEQ 82 SEQ 84 SEQ 1 SEQ 1 SEQ 1 SEQ 1 SEQ 1 SEQ 1 SEQ 2 SEQ 1 SEQ 1 SEQ 1 SEQ 1 SEQ 2 SEQ 1 SEQ 2 SEQ 1 SEQ 2 SEQ 1 SEQ 2 SEQ 2 SEQ 3	A	2311 GAGTTGAAGA GAGTTGAAGA TGAGCGAGCT TGAGCGAGCT TGAGCGAGCT TGAGCGAGCT TGAGCGAGCT TGAGCGAGCT	2321 TGATACCTCA TGATACCTCA CAAGAAGCTG CAAGAAGCTG CAAGAAGCTG	2331 TAGACGATCA TAGACGATCA GCCAAGTTTT GCCAAGTTTT	2341 ATGGACCCTT ATGGACCCTT ATGGACCCTT AG AG AG AG AG AG AG	2351 GCATATTATT GCATATTATT	AAACGCCGAC TCTCGGTCTCC T.	GAGGTGGCGC 2371 TGCGTATGTT	GGGTGACGCA 2381 CAAGGTATTC	GTTGATGGCG 2391 ACAGTAGCTG

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	2401	2411	2421	2431	2441	2451	2461	2471	2481	2491
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SEQ 1		AGTTTCTCCG								
SEQ 2										
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	2501	2511	2521	2531	2541	2551	2561	2571	2581	2591
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SEQ 1			GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	-
SEQ 1 SEQ 2	AATATAAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	-
SEQ 2 SEQ 4	AATATAAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	-
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SEQ 2 SEQ 4 SEQ 5 SEQ 7	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	-
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SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 9 SEQ 11	AATATAAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- G - - -
SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 9 SEQ 11 SEQ 13	AATATAAAA	GCGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- G - - -
SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15	AATATAAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- G - - -
SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 9 SEQ 11 SEQ 17 SEQ 15 SEQ 17	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- G - - -
SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 17	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- G - - -
SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 18 SEQ 20	AATATAAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- G - - - - - -
SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 15 SEQ 17 SEQ 18 SEQ 20 SEQ 21	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- G - - - - - -
SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 9 SEQ 11 SEQ 13 SEQ 17 SEQ 17 SEQ 18 SEQ 20 SEQ 20 SEQ 21 SEQ 23	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- - - - - - - - - -
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SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 11 SEQ 15 SEQ 15 SEQ 17 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- - - - - - - - - -
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SEO 2 SEQ 4 SEQ 5 SEQ 7 SEQ 11 SEQ 11 SEQ 15 SEQ 15 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 29 SEQ 32 SEQ 32 SEQ 32	AATATAAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- - - - - - - - - - - - - - - - - - -
SEQ 2 SEQ 4 SEQ 5 SEQ 7 SEQ 11 SEQ 15 SEQ 15 SEQ 17 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 26 SEQ 28 SEQ 29 SEQ 32 SEQ 34 SEQ 34 SEQ 34 SEQ 34	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- - - - - - - - - - - - - - - - - - -
SEO 2 SEQ 4 SEQ 5 SEQ 7 SEQ 17 SEQ 11 SEQ 15 SEQ 15 SEQ 20 SEQ 21 SEQ 21 SEQ 23 SEQ 25 SEQ 25 SEQ 29 SEQ 29 SEQ 34 SEQ 34 SEQ 36 SEQ 37	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- - - - - - - - - - - - - - - - - - -
SEO 2 SEQ 4 SEQ 5 SEQ 7 SEQ 11 SEQ 12 SEQ 15 SEQ 17 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 25 SEQ 26 SEQ 32 SEQ 32 SEQ 34 SEQ 36 SEQ 37 SEQ 37	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- - - - - - - - - - - - - - - - - - -
SEO 2 SEO 4 SEO 5 SEO 7 SEO 11 SEO 15 SEO 15 SEO 15 SEO 20 SEO 21 SEO 20 SEO 23 SEO 25 SEO 28 SEO 29 SEO 34 SEO 37 SEO 37	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGAATG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- - - - - - - - - - - - - - - - - - -
SEO 2 SEQ 4 SEQ 5 SEQ 7 SEQ 17 SEQ 15 SEQ 15 SEQ 17 SEQ 20 SEQ 21 SEQ 23 SEQ 25 SEQ 25 SEQ 25 SEQ 29 SEQ 34 SEQ 34 SEQ 37 SEQ 39 SEQ 39 SEQ 39 SEQ 39 SEQ 31 SEQ 31 SEQ 31 SEQ 32 SEQ 34 SEQ 34 SEQ 41 SEQ 41 SEQ 41 SEQ 41	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGANTG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- G
SEO 2 SEO 4 SEO 5 SEO 7 SEO 11 SEO 15 SEO 15 SEO 15 SEO 20 SEO 21 SEO 20 SEO 23 SEO 25 SEO 28 SEO 29 SEO 34 SEO 37 SEO 37	AATATAAAA	GCGGGGAATG	GCTTGACCCC	GCGCAGANTG	TCGATCTCTT	CGCAAACTCT	CGGTGTATAG	GACGCTCAGC	AACGATCAAG	- G

Figure 2. A multiple alignments of the 2031 OR nucleic acid sequence from A. fumigatus (SEQ 1,2) along with related 2031 ORs from other fungi and bacteria (see also Example 4). Regions 1-11, marked with * or #, refer to regions conserved at the amino acid level between Ors but not OYEs.

Fungal 2031 ORs are given by SEQ ID No.: SEQ ID Nos. 1, 2, 4, 5, and 7, A. fumigatus; SEQ ID No. 9, A.nidulans; SEQ ID Nos. 11 and 13, C. albicans; SEQ ID Nos. 15, 17 and 18, N. crassa; SEQ ID Nos. 20, 21 and 43, M. grisea; SEQ ID No. 23 (NP_595868), S. pombe; SEQ ID Nos. 25 and 26, C. trifolii; SEQ ID Nos. 28, 29, 31, 32 and 34, F. sporotrichioides; SEQ ID Nos. 36, 37 and 82, F. graminearum; SEQ ID Nos. 39 and 41, M. graminicola; SEQ ID No. 84, U. maydis.

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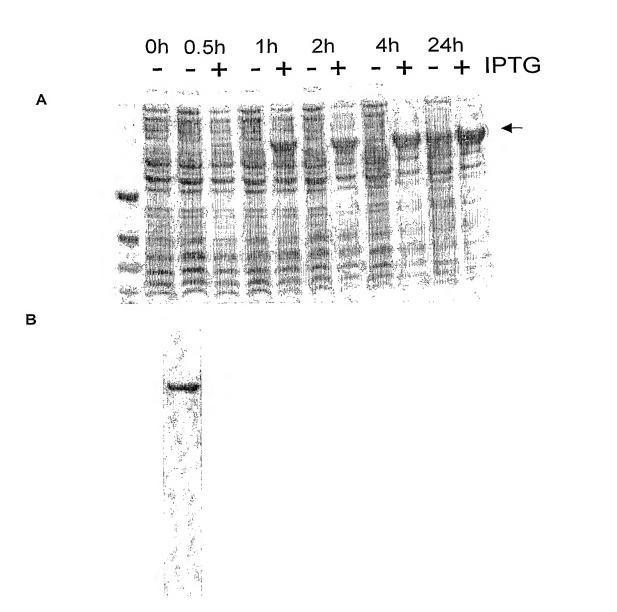


Figure 3. Recombinant 2031 OR. (A) Time course of recombinant 2031 OR induction over 24 hours after the addition of IPTG (samples without IPTG are also shown). The gel was stained with coomassie; A prominent band of the correct molecular weight (marked with an arrow) is seen. (B) Coomassie stained gel showing purified recombinant 2031.



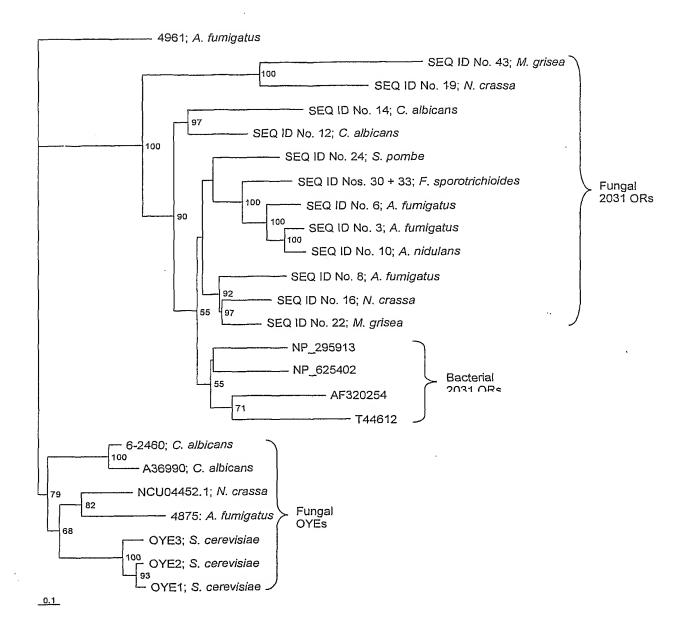


Figure 4. Phylogenetic tree showing relationships between *A. fumigatus* 2031 OR and similar proteins. This demonstrates a 2031 OR clade, which can be distinguished from the OYE proteins.

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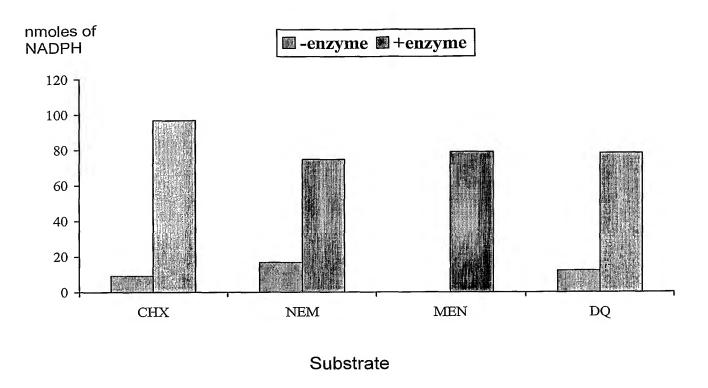


Figure 5: NADPH dehydrogenase activity of recombinant 2031 OR with cyclohexenone (CHX), N-ethylmaleimide (NEM), menadione (MEN) or duroquinone (DQ) as substrates. Final concentrations in the assay were as follows: 500 μ M substrate, 120 μ M NADPH, 1 μ g/200 μ L 2031 OR.

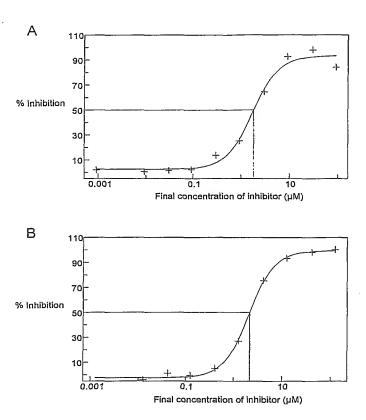


Figure 6: Inhibition of 2031 OR function by two inhibitors (shown in A and B) identified by high-throughput screening.